Section 6

Responses to Nongovernmental Organization Comments

This section contains the responses to comments submitted by nongovernmental organizations.

Friends of Great Salt Lake

Comment Number NG-1-1

Response In response to the requests received, the public comment period was extended from February 1, 2005, to March 4, 2005; on March 1 it was extended again, to March 21, 2005.

Utahns for Better Transportation

Comment Number NG-2-1

Response In response to the requests received, the public comment period was extended from February 1, 2005, to March 4, 2005; on March 1 it was extended again, to March 21, 2005.

For further responses to more detailed UBET comments received later in the comment period, see the responses to comments NG-7.

New State, Inc.

Comment Number NG-3-1

Response See the response to comment SA-2-9.

Comment Number NG-3-2

Response According to Jason Murdock of UDEQ DERR, the oil drain has been remediated from the siphon under Jordan River northward (the northern extent of the remediation is not known) (Warner, T., P.E. HDR Engineering, Salt Lake City, UT. March 14, 2005: Personal communication with Jason Murdock, Project Manager with Utah Division of Environmental Quality, Division of Response and Remediation.). Alternative B would cross the oil drain in the remediated portion. All other build alternatives would cross the oil drain in the unremediated section.

Comment Number NG-3-3

Response The Utah Auto Auction is listed as an important source of artificial light in the project study area. See Section 2.4.10, *Existing Sources of Artificial Light in Project Vicinity*, of the wildlife technical memorandum.

Great Salt Lakekeeper

Comment Number NG-4-1

Response Appendix F, *Draft Wetland Mitigation Plan*, of the Final Supplemental EIS presents the mitigation and monitoring plan for the Legacy Nature Preserve. This plan includes a description of the long-term management goals and implementation measures that are currently under review by a collaborative design team organized by the project proponent. The team's input is being used to finalize some details of the management portion of the plan. The Corps must approve the mitigation and monitoring plan as part of the Section 404 permit modification process.

Comment Number NG-4-2

Response As described in the response to comment GP-303-1, the right-of-way width for the proposed build alternatives has been reduced from 328-ft in the 2000 Final EIS to 312-ft in the Supplemental EIS. In addition, a 264-ft roadway footprint would be used within the proposed 312-ft right-of-way in specific areas of the alignment to avoid sensitive resources (see Section 2.1, *Right-of-Way Issues*, of the Final Supplemental EIS). These changes in the right-of-way width would reduce impacts on wetlands by approximately 2 acres under Alternative E (Final Supplemental EIS Preferred Alternative) compared to Alternative D (Final EIS Preferred Alternative).

The option of separating the trail from the Legacy Parkway right-of-way was examined in detail and documented in Section 3.3.4, *Alternatives without Trail Component or Separate Trail Facility*, of the Supplemental EIS and rejected for the reasons stated therein. If the trail were removed from the right-of-way, the berm would still have independent value. See the response to comment GP-212-2. Regarding location of the trail on the east side of the right-of-way rather than the west side, see the response to comment GP-313-2.

An alternative without the trail was evaluated in the right-of-way technical memorandum to determine the effect the trail has on wetland impacts. This alternative was eliminated because the trail component of the project contributes to achievement of the purpose and need as a multi-modal option of meeting the local transportation needs. An alternative without a trail was therefore not carried forward for detailed study in this Supplemental EIS because it would not achieve the project purpose and need to the degree that alternatives with a trail would, would not be acceptable to the local communities, and would not be consistent with local plans.

Comment Number NG-4-3

Response As stated in Section 3.3.4, *Alternatives without Trail Component or Separate Trail Facility*, of the Supplemental EIS, the Legacy Parkway Trail has been designed to help meet multi-modal transportation needs and to add recreational opportunities. The trail is currently proposed to be located on the eastern side of Legacy Parkway at the south end of the alignment, crossing to the west side at the north end. The

decision on where to locate the trail was made in part to avoid potential damage to the Legacy Nature Preserve and disturbance to wildlife. Specific trail amenities such as landscaping and lighting are still under consideration.

Comment Number NG-4-4

Response Section 3.2.2, *Results of Additional Alternatives Evaluation*, of the Final Supplemental EIS discusses arterial transportation facilities that follow the Redwood Road corridor. These alternatives did not meet the purpose and need of the proposed action, because I-15 in this scenario would operate under unacceptable traffic conditions (worse than LOS D in the peak period peak direction).

Regarding the concern that UDOT should be obligated to mitigate wetlands impacts associated with construction activities that occurred prior to the court injunction, as described in Section 4.12.3.1, *Direct Impacts*, of the Final Supplemental EIS, if none of the build alternatives are chosen, wetlands affected by project-related impacts to date (2005) would either be restored to preconstruction conditions or the impacts would be mitigated, as required by the Corps.

Comment Number NG-4-5

Response The project proponent has proposed the Legacy Nature Preserve to compensate for unavoidable impacts on wetland resources and wildlife that would occur as a result of the proposed action. The extent and location of the Legacy Nature Preserve are based on collaborative input from the project applicant and federal and state regulatory agencies, including the Corps, USFWS, EPA, and UDNR. The proposed mitigation area was specifically designed to meet the mandates of each of these regulatory agencies, including requirements of CWA Section 404 and the federal ESA.

If a build alternative is approved for construction by the federal lead agencies, and if that build alternative is not the project proponent's preferred alternative (Alternative E), the project proponent will likely request that the state and federal regulatory agencies revisit their decisions regarding the extent and location of the Legacy Nature Preserve. Any modifications to the proposed Legacy Nature Preserve would have to be approved by the relevant regulatory agencies before the proposed action could be implemented.

Comment Number NG-4-6

Response UDOT has removed all utilities other than PacifiCorp overhead power lines and existing flood control drainage ditches from the Legacy Nature Preserve. UDOT has finalized an agreement with PacifiCorp that allows PacifiCorp to service and maintain existing power lines within an easement, using methods that minimize disturbance to the Legacy Nature Preserve. Under this agreement, PacifiCorp also has the option of building an additional power line. UDOT is currently working with local flood control agencies to finalize similar agreements that will allow agencies to maintain existing drainage ditches and minimize disturbance to the Preserve.

Utilities within the Legacy Parkway right-of-way are allowed in accordance with Administrative Rule R930-6. Currently there are no proposals to include utilities within the right-of-way. However, as mentioned in the previous paragraph, PacifiCorp has the option of installing an additional overhead power line through

the Legacy Nature Preserve, if necessary. Any fill of wetlands that occurred during the installation of additional overhead power lines would require a permit from the Corps; the Corps would be responsible for ensuring that construction of new overhead power lines was consistent with the provisions of the Clean Water Act, as well as with the mitigation and management goals of the Legacy Nature Preserve.

Comment Number NG-4-7

Response Current design has not changed from the original proposed design. Design specifications prohibit billboards along the entire length of Legacy Parkway, and lighting is proposed only at on- and off-ramps.

If lighting were implemented along the trail, it would be shielded or directed downward.

All build alternatives would contribute minimally to cumulative effects on wildlife from increased artificial lighting within the project study area, as described in Section 4.13.3.9, *Artificial Light Disturbance*, of the Supplemental EIS and the wildlife technical memorandum.

Comment Number NG-4-8

Response Substantial expansion of mass transit is included as part of the Shared Solution for meeting North Corridor Transportation needs through 2020. See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Davis County Law Enforcement Executive Association

Comment Number NG-5-1

Response The needs addressed by Legacy Parkway, including the need for an alternate route, are presented in Section 1.2.4, *Needs Addressed by Legacy Parkway Project*, of the Supplemental EIS.

Comment Number NG-5-2

Response The needs that would be addressed by Legacy Parkway are presented in Section 1.2.4, *Needs Addressed by Legacy Parkway Project*, of the Supplemental EIS. Discussion of alternatives that do not meet the purpose and need is presented in Section 3.2, *Additional Project Alternative Evaluated in This Supplemental EIS but Eliminated from detailed Study*, of the Supplemental EIS. The concern over public safety expressed by the Davis County Law Enforcement Administrative Association is noted.

Sierra Club

Comment Number NG-6-1

Response As noted in the *Foreword/Introduction* of the Supplemental EIS, and according to FHWA NEPA regulations, the analysis in the Final EIS must be reevaluated because more than 3 years has passed. Chapter 2, *Tenth Circuit Court Ruling Analysis*, of the Supplemental EIS contains a summary of the conclusions of the technical studies required by the court. The remaining chapters constitute the results of the reevaluation. Chapter 1, *Purpose of and Need for Action*, presents the

results of the reevaluation of the purpose and need. Chapter 3, *Alternatives*, discloses the results of the evaluation of alternatives considered by FHWA, the Corps, and UDOT, including alternatives recommended by the court, alternatives recommended during the scoping process, alternatives recommended during the public comment period, and alternatives evaluated in the previous Final EIS. Chapter 4, *Supplemental Environmental Analysis*, presents the results of the reevaluation of the analysis of direct, indirect, and cumulative effects of the proposed action alternatives. Chapter 5, *Section 4(f) and 6(f) Evaluation*, presents the results of the reevaluated Section 4(f) analysis. The information in these chapters has been updated to reflect any changes in circumstances related to the existing environment or the proposed action as well as changes in methods, standards, and regulations.

Comment Number NG-6-2

Response The selection of the rural freeway roadway classification is based on the roadway's current location in a rural area. The Supplemental EIS does not state that the project study area will be urbanized by 2020, but that it will be almost fully built out in that time period. The proposed roadway would also provide a barrier to development in the corridor, and would therefore likely abut undeveloped areas, especially the Legacy Nature Preserve on the western side of the roadway. Accordingly, the selected standards for a rural roadway are appropriate for Legacy Parkway.

A comprehensive search was conducted to locate all studies conducted to evaluate median width and accident rates, all of which are cited in the Final Supplemental EIS and supporting right-of-way technical memorandum. As noted in Section 2.1, *Right-of-Way Issues*, of the Final Supplemental EIS, these studies all support the UDOT and AASHTO design guidelines for median width, thereby supporting the selection of a 50-ft median width for the proposed Legacy Parkway. Of note, in February 2005, UDOT updated its Standard Drawing DD 4 (Geometric Design for Freeways) to show a fixed 50-ft median width on new, rural freeways based on the studies noted above. Not adhering to federal or state design standards would require a design exception and would compromise driver safety.

The use of a closed median (barrier) does not dictate the speed limit. The speed limit assigned to the roadway is determined by the agency with jurisdiction over the facility; in this case UDOT would be responsible for determining the speed limit on the facility. The speed limit is based on the functional classification of the roadway, adjacent land use, and topography. The speed limit correlates to capacity, and the designations of roadway type and speed were selected to meet the purpose and need; accordingly, a reduction in speed limit was not studied further. The studies previously referenced show that accident rates increase when objects, such as a median barrier, are introduced, and that accident rates decline as the width of the median increases. In other words, all things being equal, an open median is safer than a fixed barrier median at all higher speed limits. In view of these findings, the use of a closed median was not implemented.

Comment Number NG-6-3

Response The federal lead agencies did not base their justification for the width of the median exclusively on the water quality analysis. The water quality analysis was conducted strictly to ensure that the reduction in the median (from 66 ft to 50 ft) still allowed

adequate room to achieve 80 percent removal of total suspended solids (TSS). The width of the median was based on current state and federal design standards. See the response to comment NG-6-2.

Although use of a median narrower than 50-ft on a new facility would be inconsistent with UDOT design standards for rural highways and federal design guidelines, the federal lead agencies evaluated a 26-ft median width to determine whether additional acreage of wetlands could be saved if alternative water quality control methods (i.e., other than a vegetated median) were employed. The 26-ft median width reflects the use of a 2-ft concrete median barrier and two, 12-ft internal shoulders. The 12-ft shoulders provide room for a vehicle to pull off the road without impeding the traffic lane and are required safety components of this type of freeway facility. In addition, as described in the right-of-way issues technical memorandum, other forms of median barriers (e.g., guardrail) could be placed in a vegetated median, but a concrete median barrier was analyzed because, due to its deflection characteristics, it allowed for an evaluation of the narrowest possible median barrier width.

Comment Number NG-6-4

Response The response addresses each sub-part of the comment by the letter designating the sub-part.

a, c: As described in Section 2.1.2.3, *Buffer Area Width Evaluation*, of the Final Supplemental EIS, the buffer area width was selected by UDOT and the federal lead agencies to attain four goals: (1) provide a safe separation between the roadway facility and the multiuse trail; (2) provide adequate visual screening and acoustic buffering; (3) contribute to a "parkway" type project in keeping with the desires of local communities and UDOT's commitment to context sensitive solution (CSS) principles; and (4) use CSS principles to provide the trail as an asset to the community while minimizing impacts on sensitive resources. Within the buffer area, two separate berms (totaling 3.2 miles) are proposed to provide additional visual and acoustic buffering for future planned development in Farmington and for existing and future planned development in West Bountiful. The berms are also intended to provide acoustic buffering for future planned development at both locations. They are included in the proposed right-of-way in part to address the desires of the Cities of Farmington and West Bountiful for landscaped, natural visual and acoustic barriers at specific designated locations.

As the commenter noted, there are no fixed or variable design standards for buffer areas. The appropriate minimum width of the buffer area for the Legacy Parkway project (i.e., 81–84 ft) was selected by UDOT and the federal lead agencies using best professional judgment. Specifically, the 84-ft buffer width was based on incorporation of a 9-foot berm (as measured from the roadway surface at its highest point) reflecting 1:2.5 side slopes. (See Figure 2.1-1 in Section 2.1, *Right-of-Way Issues*, of the Final Supplemental EIS).

Of note, a reduced buffer area of a minimum of 36 ft would be used within the 312-ft right-of way, where engineering and design constraints allow, to further avoid sensitive natural resources (see Section 2.1.2.4, *Alternative Right-of-Way Widths and Wetlands Impact Evaluation*, of the Final Supplemental EIS). This reduced buffer width would be used for up to approximately 2 miles of the proposed right-of-way, based on the locations of the berms and interchanges.

Although the use of a 36-ft buffer would lessen the advantages of the buffer area noted above, this tradeoff would allow for minimization of impacts on sensitive resources to the maximum extent practicable and could reduce impacts on wetlands by up to 2 acres when applied to the Alternative E (Final Supplemental EIS Preferred Alternative) alignment.

b: The *clear zone* is defined as the unobstructed area beyond the edge of the traveled way that allows for recovery of errant vehicles. The 30-ft width of the clear zone is the design standard under both UDOT and AASHTO requirements. Design standards provide guidance and requirements for designing roadways to facilitate the needs of highway users while maintaining the integrity of the environment. The design standards are based on established practices and are supplemented by recent research. The 30-ft width is independent of surfacing, pavement, or vegetation, but it must be void of any and all obstructions. The 12-ft paved portion is the design standard for the outside shoulder under both UDOT and AASHTO requirements. The remaining 18-ft portion is vegetated. See the right-of-way technical memorandum for a detailed discussion.

d: See the responses to comments NG-6-4 a and c above and Section 2.1.2.3, *Buffer Area Width Evaluation*, of the Final Supplemental EIS for a discussion of the purposes and selected locations of the proposed berm.

e, j: The width of the buffer area (81–84 ft) applies only to the side of the alignment on which the trail is located, and reflects the area necessary to accommodate the berm. (See the responses to comments NG-6-4 a and c above for a discussion of the purposes of the berm and buffer areas.) The trail follows the east side of Legacy Parkway from the I-215 interchange until it crosses to the west side at 1250 West in Centerville. The width of the side slope area on the adjacent side of the highway (i.e., opposite the trail) is based on UDOT design standards; it provides the area necessary for maintenance and safe transition from the clear zone to existing grade. For a more detailed discussion, see Section 3.1.1, *Cross-Section Right-of-Way Components*, of the right-of-way technical memorandum.

Figure 2.1-3 of the Final Supplemental EIS illustrates the proposed locations of the two separate berms. One would be located along the east side of the alignment between 500 South and Porter Lane in West Bountiful, and the other would be located along the west side of the alignment between Glovers Lane and State Street in Farmington. The berm in the Farmington area would be located along the west side of the alignment, where the Legacy Nature Preserve does not abut the western edge of Legacy Parkway. The City of Farmington has plans for future development in this area and requested the use of a berm along the parkway.

f: See the responses to comments NG-6-4 a and c.

As noted by the commenter, an 84-ft buffer area would be used in proposed berm locations to accommodate a 9-ft berm and associated 1:2.5 side slopes, thereby providing visual and acoustic buffering for future planned development in Farmington and for existing and future planned development in West Bountiful. The 81-ft buffer area, which would be used in areas without a berm, would meet the remaining goals outlined in the response to NG 6-4 a and c, in

addition to providing visual screening (via landscaping) for the remaining areas adjacent to the project right-of-way.

g, i: As noted by the commenter and described in Section 2.1.2.3, *Buffer Area Width Evaluation*, of the Final Supplemental EIS, a reduced buffer area with a minimum width of 36 ft would be used to position the footprint of the proposed highway within the 312-ft right-of-way, providing the opportunity to avoid sensitive resources where engineering and design constraints allow. This reduced buffer width would be used for up to approximately 2 miles of the proposed right-of-way, based on the locations of the berms and interchanges. Although the 36-ft buffer would lessen the advantages of the buffer area as the commenter noted, this tradeoff would minimize impacts on sensitive resources to the maximum extent practicable and could reduce impacts on wetlands by up to 2 acres when applied to the Alternative E (Final Supplemental EIS Preferred Alternative) alignment.

h: As depicted in Figures 2.1-1 and 2.1-2 of the Final Supplemental EIS, the trail is not included in any part of the buffer area; it is outside the 81–84 ft area designated for the buffer/berm and outside the reduced 36-ft buffer area. See the response to comments NG 6-4 a and c.

k: The buffer area is not intended to shield the Legacy Nature Preserve from the proposed highway. See the response to comments NG-6-4 a and c for a discussion of the purpose of the buffer area and the response to comments NG-6-4 e and j for a discussion of the proposed location of the berm areas.

Comment Number NG-6-5

Response Regarding the location of the trail, see the response to comment GP-742-14.

The combined width of the trails is 17 ft: 8 ft paved for multi-use, 6 ft unpaved for equestrian use, and 3 ft between the trail and the fence. The paved portion would provide walkers, runners, and bicyclists with a smooth surface. The unpaved portion would contain mulch, a substrate suited for equestrian use. The separate facilities would also accommodate each type of user without introducing potential conflicts between equestrians and humans. The 3-ft area between the trail and the fence is required for the fill slope. The trail is located 1 ft above the existing ground surface to accommodate the surfacing without requiring excavation.

The *AASHTO Guide for the Development of Bicycle Facilities* is the only official guide available. The guide suggests a "wide separation." (American Association of State Highway and Transportation Officials 1999.) However, the Supplemental EIS and the right-of-way technical memorandum provide detailed discussions of each of these component widths.

Comment Number NG-6-6

Response The area between the roadway footprint and the edge of the 312-ft right-of-way would be protected from future impacts. This area would be owned and maintained by UDOT and protected from any future development. If these areas were not maintained within the UDOT right-of-way, wetland protection would not be ensured. Avoiding placement of fill material in existing wetlands is preferable to complete elimination. For a detailed discussion of this issue, see the right-of-way technical memorandum.

Utilizing design flexibility within the protected 312-ft right-of-way would allow UDOT to minimize placement of fill material in existing wetlands to the maximum extent practicable, thereby retaining some of the existing wetland functions and values within the project study area.

The Clean Water Act requires that applicants avoid, minimize, and compensate for impacts on wetlands. Such measures specific to the development of the proposed action, including minimization of project impacts through incorporation of design flexibility techniques, are described in Section 4.12.3.4, *Mitigation Measures*, of the Final Supplemental EIS.

Comment Number NG-6-7

Response The Supplemental EIS presents cost estimates reflecting various levels of engineering design and development. The estimates in Section 2.2.3.3, *Regional Corridor Costs and D&RG Alignment-Specific Costs*, reflect regional corridor estimates. These are conceptual estimates for planning purposes only and were used as a baseline for determining the approximate costs for individual corridors.

More detailed cost estimates were also developed for conceptual alignments within the D&RG regional corridor—as well as for Alternative E in the Great Salt Lake regional corridor—based on a variable right-of-way width of between 264 ft and 312 ft. Although the federal agencies consider that the use of regional corridor estimates is adequate and appropriate for determining the feasibility of a project alternative within a regional corridor, the additional assessment of the D&RG conceptual alignments was completed to verify the cost differential between alignments within the D&RG and Great Salt Lake regional corridors. As summarized in Table 2.2-9 and explained in detail in Appendix G, *Updated Cost Estimates*, of the Final Supplemental EIS, the conceptual cost estimate for Alternative E is substantially lower than the conceptual cost estimates for the five different conceptual D&RG alignments.

The regional corridor cost estimates (see Table 2.2-8 of the Final Supplemental EIS) prepared for the other regional corridors (i.e., Antelope Island, Trans-Bay, Union Pacific, and Farmington Bay) cannot be compared to the alignment-specific cost estimates prepared for the D&RG conceptual alignments or for Alternative E because they represent very different levels of planning. It should be noted that impacts on existing development, rather than costs, were used to screen out the D&RG conceptual alignments from detailed consideration in the Final Supplemental EIS; moreover, as indicated in Section 2.1.2, *Summary of Right-of-Way Analysis*, of the Supplemental EIS, a right-of-way width narrower than 312 ft was also evaluated and rejected from further consideration.

In reference to footnote 8, all the cost estimates reflect a water treatment cost that is based on the 80 percent TSS removal requirement. Whether the alignments are located in more or less developed areas, they are all required to treat the water to remove 80 percent of the TSS. This requirement ensures that all water leaving the right-of-way is of the same quality regardless of the location.

Comment Number NG-6-8

Response The estimates of the construction costs of Alternatives D and E presented in Appendix G, *Updated Cost Estimates*, of the Final Supplemental EIS reflect the anticipated cost of building those alignments. They do not factor in numerous other costs of bringing a project to completion (e.g., contract incentives, inflation/time

over which money will be spent, UDOT oversight expenses, and similar costs for which the state must budget). These additional costs, while not relevant to the EIS analysis, would have to be paid by the state. Such additional costs constitute the difference between those presented in the Supplemental EIS and those discussed by UDOT with the State Legislature. See the response to Comment NG-7-26.

The characteristics of the soils that occur along each of the alignments were considered when evaluating the construction cost estimates. These costs are reflected in Appendix G, *Updated Cost Estimates*, of the Final Supplemental EIS, and were independently verified by FHWA's Major Projects Unit (see Section 1.5 of Appendix G).

Comment Number NG-6-9

Response Section 2.2, *Denver & Rio Grande Corridor Evaluation*, of the Supplemental EIS provides data that support the Corps' original conclusion: that an alignment within the D&RG regional corridor would be impractical because of the additional cost and impacts on existing development (compared to an alignment within the Great Salt Lake corridor) associated with developing an alignment for Legacy Parkway east of the proposed action.

A description of the cost estimating methodology and cost estimates prepared at different stages of alternative development (i.e., regional corridors, conceptual alignments, and build alternatives) are presented in the D&RG technical memorandum.

Right-of-way issues, including median width, are evaluated in Section 2.1, *Right-of-Way Issues*, of the Supplemental EIS. UDOT would apply the same criteria to any new highway facility regardless of location. For informational purposes only, the federal agencies also evaluated a narrower, 62-m (204-ft) roadway cross section to be used in conjunction with the 95-m (312-ft) cross section to minimize impacts where the D&RG alignments cross wetlands or existing development. This cross section has an open, 50-ft median. The reduction in width is achieved by removing the trail and incorporating retaining walls outside the 30-ft clear zone to reduce the highway footprint. The 62-m (204-ft) cross section is the narrowest cross section that could be built while maintaining design standards. Minimal impact reductions were achieved with this narrower cross section. For example, only one to four relocations and 3 to 7 acres of wetland impacts would be avoided using this narrower roadway cross section. The right-of-way technical memorandum evaluates a roadway cross section that does not include a trail and reduces the median to 26 ft (i.e., a width that reflects a median barrier and two, 12-ft shoulders). This roadway section is 71 m (234 ft) wide and includes only the roadway facility. This type of roadway (i.e., without a trail) was previously determined by the Corps to be impracticable, but was included in this analysis at the request of the federal lead agencies. UDOT does not propose to construct any alternative with this cross section. This cross section is, however, wider than the section used to evaluate the D&RG alignments, as described above.

The criteria for establishing the alignments within the D&RG corridor are described in Section 2.2.2.1, *Development of D&RG Conceptual Alignments*, of the Supplemental EIS. With respect to the D&RG railroad corridor, the right-of-way is eligible for listing in the NRHP and is therefore subject to Section 4(f) of the U.S. Department of Transportation Act of 1966 regulations. More importantly, the rail is active south of 400 North in West Bountiful and serves oil refinery properties

within the corridor. Using the railroad right-of-way would require relocating the D&RG tracks to continue to serve these facilities.

The CWA defines *practicable* is defined as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.3). The Corps considers impacts on existing development in both its cost and logistics evaluation criteria. Although *logistics* is not specifically defined in the CWA, Webster's New World Dictionary defines the term to mean "the managing of the details of an undertaking." For the purposes of this Supplemental EIS, the Corps considers an alternative to be logistically impracticable if any of the details associated with implementing that alternative make that alternative unreasonable. This approach was supported in the court decision, in which the appellate court stated that the Corps' decision to eliminate the Denver & Rio Grande alignment due to high cost and high impacts on existing development was not arbitrary or capricious because "...impacts on existing development would appear to fall within both the cost and logistics portion of the practicable definition" (*Utahns for Better Transportation et al. v. United States Department of Transportation et al.* [305 F.3d 1152 (10th Cir. 2002)], page 60). See the discussion in the section *Lead Agencies and Required Permits and Approvals* of the *Foreword/Introduction* of the Final Supplemental EIS for clarification on the Corps' definition and application of the Clean Water Act practicability standard.

Comment Number NG-6-10

Response See the response to comment NG-7-8.

Comment Number NG-6-11

Response Section 4(f) (49 USC 303) applies to FHWA's decision on the proposed action. In accordance with 23 CFR 771.135 (a)(1), "The Administration may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site.…" Specifically, this regulation applies to FHWA's selection and approval of alternatives in this NEPA process. The 2000 Final EIS included a Section 4(f) evaluation in accordance with 23 CFR 771.135. The Supplemental EIS updates that evaluation.

As part of the NEPA process, the federal agencies are required to consider all applicable laws, including Section 4(f) and Section 404. Identifying Section 4(f) properties does not mean that FHWA has concluded that Section 4(f) and Section 404 conflict or that one law overrides the other. In addition, the Supplemental EIS identifies various alignments within the D&RG regional alignment that would not use the D&RG right-of-way. Therefore, FHWA does not need to create a conceptual alignment of the Section 4(f) D&RG right-of-way or determine whether the Section 404 regulations could be read to override the express congressional direction of Section 4(f).

The 4(f) impacts for which mitigation is proposed along the Great Salt Lake regional alignment are relatively minor impacts that could be mitigated in conjunction with and pursuant to the direction and approval of the Utah SHPO. In contrast, the impacts that would result by implementing the proposed action in the historic D&RG corridor would not be readily mitigated in the same fashion. In addition, a portion of the D&RG corridor is still an active rail corridor. These are

the primary reasons for not using the railroad alignment itself for analyzing the D&RG alternative.

Comment Number NG-6-12

Response See the responses to comments NG-7-72 and NG-7-40.

Comment Number NG-6-13

Response See the response to comment NG-7-39.

Comment Number NG-6-14

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-6-15

Response Section 3.11, *Cumulative Effects*, of the wildlife technical memorandum presents a rigorous GIS-based analysis and quantitative evaluation of changes in the availability of wildlife habitat for migratory species in the project and regional study areas. This evaluation addresses historic (i.e., presettlement, or before 1847) conditions; recent conditions; and reasonably foreseeable future conditions. This analysis is included by reference and briefly summarized in Section 4.13.3.13, *Cumulative Impacts*, of the Supplemental EIS. Figure 3-19 in the wildlife technical memorandum shows the estimated historic conditions of wetland and associated upland habitat in the regional study area before Euroamerican settlement. Figure 3-20 shows the current land use conditions, clearly illustrating considerable loss of habitat. Table 3-9 provides a quantitative summary of these losses (20–83 percent) by hydrologic unit. Figure 3-29 shows the current trend in permitted wetland conversion in Salt Lake and Davis Counties compared to conversion that would occur under the proposed action.

Reasonably foreseeable future conditions were estimated using current land ownership status as an indicator of future potential habitat loss, estimated future development, and population growth in the region, estimated future development in the project study area, and assessing the relative contribution of the proposed action's impacts to the cumulative effects. A detailed quantitative summary of the results of these analyses is presented in Section 3.11.4, *Cumulative Effects Analysis Summary*, of the wildlife technical memorandum.

Comment Number NG-6-16

Response Most of the discussion in Section 4.21.3.11, *Wetlands*, of the Supplemental EIS addresses past and future impacts of development on wetland resources in the region. Moreover, cumulative effects of past and future development on wildlife habitat are discussed in Section 4.13.3.13, *Cumulative Impacts*, and Section 4.13.3.1, *Direct Habitat Loss*, of the Supplemental EIS. The Supplemental EIS does not, as the Final EIS did not, quantify the extent or precise timing of these impacts; to do so would be too speculative to conform to NEPA requirements, because such impacts are dependent on the timing of development, the character of specific actions, and any mitigation associated with the development.

Comment Number NG-6-17

Response See the response to comment NG-7-119. As summarized in Section 4.13.1, *Approach and Methodology*, of the Supplemental EIS and described in detail in Section 2.4.2, *Existing Distribution and Use of Wildlife Habitats*, of the wildlife

technical memorandum, wildlife impacts were identified and assessed on both a habitat basis and a species-specific basis. Habitat-based impact analysis is a standard, scientifically valid and widely accepted method for evaluating project effects on wildlife. This methodology was fully reviewed and approved by the Legacy Parkway Science Technical Team, and was based on the best commercial and scientific data available on bird species in the project study area.

Local surveys of bird populations in both the regional and project study areas (Dolling 2003, Paul and Manning 2002) and scientific literature were used to estimate species densities and to verify the effects of habitat loss and change. Figure 2-9 in the wildlife technical memorandum shows the non-uniform distribution of different bird species throughout the GSLE. The data in this figure summarize the results of a 5-year UDWR survey of waterbird distribution and abundance in the GSLE; these results clearly indicate regional concentrations of species in suitable habitat around Great Salt Lake.

Based on these analyses, it was determined that habitat availability and quality are key determinants of long-term viability of species within the project and regional study areas. Therefore, the analysis of impacts on wildlife in the Supplement EIS was designed to provide specific quantitative and qualitative information on the effects of the proposed action on wildlife species and their habitats, and in particular, migratory birds.

The biological importance of Farmington Bay is addressed in the response to comment NG-7-120.

Furthermore, the analysis in the wildlife technical memorandum and the Final Supplemental EIS does not assume that all wildlife habitat currently available in the regional study area will remain available indefinitely. Section 3.11, *Cumulative Effects*, of the wildlife technical memorandum provides quantitative estimates of historic, current, and reasonably foreseeable future habitat availability in the regional study area. This analysis describes extensive losses of historic wetland habitat to land use conversions, and indicates that these losses are ongoing and will continue in the future. Figure 3-30 of the wildlife technical memorandum shows the present status of land-cover types in the region, as well as wildlife habitat areas currently under public and private ownership that would be subject to modification or loss in the future, at both low and high lake levels. Table 3-12 provides comprehensive estimates of the potential loss/degradation of different wildlife habitats in the regional study area at 10-year intervals through 2030. The concerns regarding the cumulative impacts analysis are addressed in the response to comment NG-6-15.

Comment Number NG-6-18

Response The wildlife impact analysis in the wildlife technical memorandum and the Final Supplemental EIS is not based solely on low lake levels; it takes into account the dynamic fluctuation in the level of Great Salt Lake. Figures 3-5a and 3-5b in the wildlife technical memorandum and Figures 4a and 4b of Appendix E, *Analysis of the Adequacy of the Wetland and Wildlife Mitigation*, of the Final Supplemental EIS show the pattern of inundation with lake level change from 4,200 ft to 4,220 plus ft and the encroachment of inundation on existing wildlife habitat in the project study area and proposed Legacy Nature Preserve. Figures 3-6 to 3-15 in the wildlife technical memorandum provide a comprehensive quantitative analysis of the change in habitat availability in the project study area with rise in lake level

across these elevations. Figures 3-15 and 3-16 in the wildlife technical memorandum summarize the change in habitat availability between low lake level and high lake level for the project study area and regional study area. The potential effects of lake level change combined with habitat loss caused by the proposed action on wildlife (both mobile and less mobile species) are analyzed and discussed in Section 3.11, *Cumulative Effects*, of the wildlife technical memorandum and Sections 4.13.3.2, *Changes in Lake Level and Habitat Availability*, and 4.13.3.14, *Mitigation Measures*, of the Supplemental EIS. See the response to comment NG-7-52 for a discussion of the recovery dynamics of wildlife to lake level changes.

Likewise, the Final Supplemental EIS has been updated to include a quantitative analysis of the effects of lake level change on wetland function in the Legacy Nature Preserve (see Section 4.12.3.4, *Mitigation Measures*). Table 4.12-7 of the Final Supplemental EIS discloses the functional capacity unit credits for the Legacy Nature Preserve that would be affected by varying inundation levels of Great Salt Lake. In addition, Section 3.0 of Appendix E, *Analysis of the Adequacy of the Wetland and Wildlife Mitigation*, of the Final Supplemental EIS describes the consequences that flooding would have on wetland habitats in the Preserve.

Comment Number NG-6-19

Response Biological information on the specific effects that habitat fragmentation would have on different species was not presented in the Final Supplemental EIS because it is not available. See the response to comment NG-7-122.

Comment Number NG-6-20

Response Appendix E, *Bioacoustics Analysis of Potential Effects of Highway Noise on Wildlife of Great Salt Lake*, and Section 3.8, *Highway Noise Disturbance*, of the wildlife technical memorandum provide an in-depth analysis of the potential impacts of highway noise on birds in the project study area, including special-status species that occur or could potentially occur there. This analysis is summarized in Section 4.13.3.10, *Noise Disturbance*, of the Final Supplemental EIS. The wildlife analysis protocol uses standard methods for noise analysis and best available information. The Traffic Noise Model used to estimate the range of noise effects has been validated for distances up to 1,300 ft from a noise source, but that does not mean that it cannot provide reasonable estimates for greater distances (see the response to comment NG-7-47 and Section 4.9.1.2, *Methods Used to Update Noise Analysis*, of the Supplemental EIS) (Federal Highway Administration 2003). The analyses in Appendix E describe potential masking effects for American bittern out to 3 miles, but also address other species representative of the project study area: Brewer's sparrow and black-necked stilt. The noise tolerances of birds in the project study area are not known.

The Supplemental EIS acknowledges the potential for indirect impacts on wildlife from implementation of the proposed action. As stated in Section 4.13.3.14, *Mitigation Measures*, of the Supplemental EIS, monitoring noise and conducting surveys for representative bird species, prior to and during construction, to document noise impacts would constitute appropriate mitigation for indirect impacts, in addition to the habitat that will be preserved and improved as part of the Legacy Nature Preserve. After additional consultation and coordination, the wildlife agencies requested assistance from UDOT wildlife specialists to develop and implement a postconstruction monitoring plan that meets both the lead

agencies' NEPA responsibilities and the wildlife agencies' objectives. This commitment is included in Appendix H, *Statement of Commitment*, of the Final Supplemental EIS. An analysis of the effectiveness of the proposed mitigation is presented in Appendix E, *Analysis of the Adequacy of the Wetlands and Wildlife Mitigation*, of the Final Supplemental EIS.

Comment Number NG-6-21

Response See Master Response 7 in Section 2 of this response to comments volume. The federal lead agencies do not agree that there were flaws in the traffic models and thus do not accept the premise of this comment, that the air quality modeling is based on flawed travel demand modeling.

Comment Number NG-6-22

Response Mobile source air toxics (MSAT) are described in Sections 4.8.2.5, *Air Toxics*, and 4.8.3.2, *Mesoscale Evaluation*, of the Final Supplemental EIS. As described in those sections, MSATs are a subset of the 188 air toxics defined by the Clean Air Act. MSATs originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories and refineries). Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline (see document No. EPA420-R-00-023 [December 2000]).

EPA is the federal agency that leads administration of the Clean Air Act and has certain responsibilities regarding the health effects of MSATs (see document No. EPA400-F-92-004 [August 2004]). More recently, in accordance with Section 202 of the Clean Air Act, EPA issued the *Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources* (66 FR 17229, March 29,2001) whose preamble provides the following summary information regarding the effects and control of MSATs.

> Today's action addresses emission of hazardous air pollutants (HAP) from motor vehicles and their fuels. Hazardous air pollutants refer to a range of compounds that are known or suspected to have serious health or environmental impacts. Motor vehicles are significant contributors to national emissions of several hazardous air pollutants, notably benzene, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel particulate matter, and diesel exhaust organic gases.
>
> In today's action, we list 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. Our MSAT list includes various volatile organic compounds (VOCs) and metals, as well as diesel particulate matter and diesel exhaust organic gases. The selection methodology we used to develop this MSAT list, which may be used to add compounds to or remove compounds from the list in the future as new information becomes available, is also described. In today's action, we also examine the mobile source contribution to national inventories of these emissions and the impacts of existing and new promulgated mobile source control programs, including our reformulated gasoline (RFG) program, our national low emission vehicle (NLEV) standards, our Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and our proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 1990 and 2020, we project these programs will reduce on-

highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 67 to 76 percent, and will reduce on-highway diesel PM emissions by 90 percent.

In the 2001 rulemaking, EPA identified six priority MSATs: acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein, and 1,3 butadiene (66 FR 17230). EPA is in the process of assessing the health and environmental effects of exposure to these pollutants.

The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. This information is taken verbatim from EPA's IRIS database and represents the most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Under the proposed revised *Carcinogen Risk Assessment Guidelines* (U.S. Environmental Protection Agency 1996), benzene is characterized as a known human carcinogen.
- Under the *Draft Revised Guidelines for Carcinogen Risk Assessment* (U.S. Environmental Protection Agency 1999), the potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans and sufficient evidence in animals.
- Under the *Draft Revised Guidelines for Carcinogen Risk Assessment* (U.S. Environmental Protection Agency 1999), 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- Under the *Draft Revised Guidelines for Carcinogen Risk Assessment* (U.S. Environmental Protection Agency 1999), diesel exhaust (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.

As noted above, EPA is the lead federal government agency responsible for the establishment of national air quality standards, national guidance, and guidelines for the uniform and scientifically reliable study of air pollutants. To date, neither NAAQS for MSATs nor national project-level guidelines or guidance to study MSATs under various climatic and geographic situations have been developed. Such limitations make the study of MSAT concentrations, exposures, and health impacts difficult and uncertain. Thus, accurate and reliable estimates of actual human health or environmental impacts from transportation projects and MSATs are not scientifically possible at this time.

EPA has also not established toxicity factors for diesel particulate matter, although one study asserts that this pollutant accounts for a large portion of MSAT health risk in certain situations, using a toxicity factor that is unique to California.

Project-Level MSAT Discussion

The analysis of air toxics is an emerging field. The U.S. DOT and EPA are currently working to develop and evaluate the technical tools necessary to perform air toxics analysis, including improvements to emissions models and air quality dispersion models. Limitations with the existing modeling tools preclude conducting the same level of analysis that is typically conducted for other pollutants, such as carbon monoxide.

FHWA's ongoing work in air toxics includes a research program to determine and quantify the contribution of mobile sources to air toxic emissions, the establishment of policies for addressing air toxics in environmental reports, and the assessment of scientific literature on health impacts associated with motor vehicle toxic emissions.

Although reliable quantitative methods do not exist to accurately estimate the health impacts of MSATs associated with the Legacy Parkway project, it is possible to qualitatively assess future MSAT emissions under the project alternatives. Based on this approach and as described in Section 4.8.3.2, *Mesoscale Evaluation*, of the Supplemental EIS, it is likely that the build alternatives would result in lower MSAT emissions than the No-Build Alternative, and that future emissions under both the build and no-build scenarios would be lower than present-day emissions.

The amount of MSATs emitted under the build alternatives would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same for each alternative. Because the Supplemental EIS states that impacts on regional air quality related to MSATs are not expected to increase under any of the build alternatives, it is expected that there would be no appreciable difference in overall MSAT emissions between the No-Build and build alternatives.

In addition, 2020 emissions would likely be lower than existing levels as a result of EPA's national control programs (such as diesel fuel standards), which are expected to reduce MSAT emissions by 67 to 90 percent, both per vehicle mile and total fleet. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions are likely to be lower in the future as well. FHWA considers these projections credible because the control programs are required by statute and regulation. Also, because the build alternatives would reduce VMT in the project area compared to the No-Build Alternative, based on WFRC air quality data, FHWA believes MSAT emissions in 2020 would also be lower in the project area under the build alternatives. Because MSAT emissions on a per VMT basis are expected to decline due to EPA's control program, and because each of the build alternatives would result in a nearly equal reduction in VMT relative to the No-Build Alternative, FHWA does not believe that there would be significant adverse impacts on the human environment.

Unavailable or Incomplete Information for Project Specific MSAT Impact Analysis

As noted above, the science and modeling of project specific MSAT impacts has not developed to the point where there is certainty or scientific community acceptance. Accordingly, information on MSAT impacts on any of the alternatives in the Final Supplemental EIS is not available, and the means to obtain this information have not been fully developed. When this is the case, 40 CFR 1502.22(b) requires FHWA to address four provisions: 1) A statement that such information is incomplete or unavailable; 2) A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; 3) A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and 4) The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. These provisions are addressed as follows.

1. *Information is Incomplete or Unavailable*. Project specific MSAT analysis is an emerging field in which the science has not been developed and is, therefore, unavailable. FHWA is aware that MSAT releases to the environment may cause some level of pollution. What is not scientifically definable is an accurate level of human health or environmental impacts that would result from construction of new transportation facilities or modification of existing facilities. Project-level MSAT risk assessment involves four major steps: emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is currently encumbered by technical shortcomings that prevent a formal determination of the MSAT impacts of the proposed project. The emissions model (MOBILE6.2) is based on limited data raising concerns over the accuracy of the final estimates. Further the particulate emissions rate from MOBILE6.2 is not sensitive to vehicle speed, which is an important determinant of emissions rates (this is a shortcoming for diesel particulate matter, but not the remaining priority MSATs) or acceleration. Given uncertainties in the emissions estimation process, subsequent calculated concentrations would be equally uncertain. But beyond this, the available dispersion models have not been successfully validated for estimating ambient concentrations of particulate matter or reactive organic MSATs. Available exposure models are not well designed to simulate roadside environments. Finally, the toxicity value of at least one of the priority MSATs, that of diesel particulate matter, has not been nationally established, which would prevent the determination of health impacts of this pollutant even if the other necessary tools were available. Thus, current scientific techniques, tools, and data make it impossible to accurately estimate actual human health or environmental impacts from MSATs that would result from a transportation project.
2. *Relevance of Incomplete or Unavailable Information to Evaluating Reasonably Foreseeable Significant Impacts.* Without the assessment tools and data necessary to complete a project-specific MSATs analysis, it is impossible to quantitatively evaluate the air toxic impacts at the project level. As such, an assessment of the significant adverse impacts on the human environment must

be made qualitatively based on the information available and professional judgment. The Final Supplemental EIS and this response to comments document provide that qualitative evaluation.

3. *Summary of Existing Credible Scientific Evidence Relevant to Evaluating Impacts.* As described above, research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some MSATs are either statistically associated with negative health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate negative health outcomes when exposed to large doses. There have been other studies and papers that suggest MSATs have health impacts. However, noting that unresolved issues still remain, the Health Effects Institute, a non-profit organization jointly funded by EPA and industry, has undertaken a major series of studies to determine whether MSAT hot spots exist and what the health implications are if they do. The final summary of these studies is not expected to be completed for several years.

   Recent studies have been reported to show that close proximity to roadways is related to negative health outcomes, particularly respiratory problems. However, these studies have encompassed the full spectrum of both criteria pollutants and other pollutants and are often not specific to MSATs. Thus it is impossible to determine whether MSATs or the criteria pollutants are responsible for the health outcomes.

   There is also considerable literature on the uncertainties associated with the emissions modeling process. The most significant of these is an assessment conducted by the National Research Council (2000. *Modeling Mobile-Source Emissions*. Washington, DC: National Academy Press.). This review noted numerous problems associated with then-current models, including the predecessor to the current MOBILE 6.2 model. The review found that "significant resources will be needed to improve mobile source emissions modeling." The improvements cited include model evaluation and validation, and uncertainty analysis to raise confidence in the model's output. While the release of MOBILE 6.2 represents an improvement over its predecessor, the MSAT emission factors have not been fully validated due to limits on dispersion modeling and monitoring data. The MOBILE 6.2 model is currently being updated and its results will not be evaluated and validated for several years.

4. *Agency Evaluation of Impacts based on Theoretical Approaches or Generally Accepted Research Methods*. Although there is no accepted model or science for determining the impacts of project-specific MSATs, as noted above, EPA predicts that its national control programs will result in meaningful future reductions in MSAT emissions, as measured on both a per vehicle mile and total fleet basis. FHWA believes that these projections are credible because the control programs are required by statute and regulation. Also, since the build alternatives result in reduced VMT in the project area relative to the No-Build Alternative, based on WFRC air quality data, FHWA is confident that MSAT emissions will also be lower in the project area in 2020 under the build alternatives. Because MSAT emissions on a per VMT basis are expected to decline due to EPA's control program, and because each of the build alternatives would result in a nearly equal reduction in VMT relative to the No-

Build Alternative, FHWA does not believe that there will be significant adverse impacts on the human environment.

Utahns for Better Transportation

Comment Number NG-7-1

Response As shown in Chapter 3 of the Supplemental EIS, and particularly Tables 3-2 and 3-4 and Figure 3-3, the Shared Solution with Legacy Parkway fully meets the stated project purpose and need. Information submitted by the commenter also supports this finding. The following is shown in the *Report on the Citizens' Smart Growth Alternative to the Proposed Legacy Parkway* (Smart Mobility, Inc., and R. B. Cervero. 2005. March.).

- Level of service conditions throughout the North Corridor in 2001 are primarily LOS E, 2020 No Build conditions are primarily LOS F, and the 2020 Shared Solution provides LOS D or better. The Shared Solution with Legacy Parkway transforms about 20 miles of freeway on I-15 and I-215 from LOS E or F to acceptable LOS (figures on pages 45, 46, and 47).
- The level of service on I-15 in the North Corridor is LOS D or better under the Shared Solution, but LOS E and F under the UBET Alternative (graphics on page 13).

Table 4.3-9 in Section 4.3, *Social*, of the Supplemental EIS also shows that the Shared Solution benefits the communities in the North Corridor by reducing traffic and congestion on local streets throughout the corridor.

Comment Number NG-7-2

Response Scoping comments were fully considered during the process of preparation of the Supplemental EIS. These comments were summarized and documented in the Scoping Report. Moreover, comments received during the community planning information committee (CPIC) meetings were fully considered and are documented in the CPIC meeting minutes included as part of the record. All comments received during the CPIC meetings and scoping process from various sources were given equal consideration. Literature, maps, and reports submitted as part of that input have been included in the administrative record. A reevaluation of the information included as part of the previous Final EIS process was conducted; this reevaluation included a review of comments and responses received during that process.

Comment Number NG-7-3

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Based on the analysis of the UBET Alternative, which is summarized in Chapter 3, *Alternatives*, of the Final Supplemental EIS, the UBET Alternative would not provide adequate transportation capacity in the North Corridor. Under the UBET Alternative, I-15 in the corridor would operate at LOS E or F. Therefore, the UBET Alternative would not meet the purpose and need.

Comment Number NG-7-4

Response None of the travel model runs that were conducted demonstrate likely viability of the UBET Alternative. The model run referred to in the comment as one that

"demonstrated the likely viability of the CSGA [UBET Alternative]" contained errors in the reversible lane detail and therefore could not be used to draw conclusions. The run was not used as a basis for analyses or conclusions in the Supplemental EIS and was not mentioned for those reasons. Master Response 5, which describes the UBET Alternative analysis, explains the reversible lane analysis that was performed correctly for the Supplemental EIS. See the response to comment NG-7-73. See also Master Responses 5 and 6 in Section 2 of this response to comments volume.

All travel model files generated in support of the Supplemental EIS transportation analyses were provided to UBET for review.

Comment Number NG-7-5

Response The Shared Solution, as evaluated in the Supplemental EIS, entails a combination of improvements that include improvements to I-15, construction of a new roadway facility, and implementation of maximum future transit initiatives. Maximum future transit is similar to the 2030 transit scenario included in the long range plan, but maximum future transit was conceived as the maximum transit system that would be reasonably achievable in 2020 if transit funding is more aggressively pursued in the short term than is prescribed by the 2030 scenario. As such, maximum future transit reflects a 2020 transit scenario, not the 2030 transit scenario. The complete description of the 2020 maximum future transit scenario is presented in the integration technical memorandum. The base WFRC travel demand model includes existing UTA operating plans, programmed transit projects, and other highway and transit projects included in the WFRC long range plan through Phase 2. The projected completion date for Phase 2 projects is 2022. Section B3.2.2, *Transit Network Assumptions*, of Appendix B, 2020 *Travel Demand Analysis*, of the Supplemental EIS states that travel conditions would be marginally worse in 2020 than predicted if key transportation network projects are delayed until 2022.

The Redwood Road Arterial Alternative was modeled with I-15 at 10 lanes. The text in Section 3.2.2, *Results of Additional Alternatives Evaluation,* of the Supplemental EIS was and is correct. The fact that Table 3-3 in Section 3.1.6, *Reevaluation of Project Alternatives Using Revised Travel Demand Model,* of the Draft Supplemental EIS reflected an 8-lane I-15 was a typographical error. Table 3-3 has been corrected in the Final Supplemental EIS to show 10 lanes (includes 2 HOV lanes) for the I-15 configuration. Thus, the analysis performed for the Redwood Road Arterial Alternative is consistent with analyses of the other build alternatives in addressing both I-15 improvements and transit components. The traffic modeling results presented in the Supplemental EIS are accurate and reflect an appropriate range of feasible alternatives.

Comment Number NG-7-6

Response The proposed action addresses traffic flow at what is anticipated to be one of the most severe chokepoints in the North Corridor during the study period. The Supplemental EIS presents traffic analysis results for existing conditions as well as under the future 2020 No-Build and Build Alternatives. Section 4.3.3.4, *Travel Patterns and Accessibility,* of the Supplemental EIS discusses the anticipated traffic levels along interstates/major arterials that are outside the project study area. These

traffic issues are addressed in other studies and initiatives as identified in the Supplemental EIS.

Comment Number NG-7-7

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume. As stated in that response, the federal lead agencies found that the UBET Alternative would not meet project purpose and need. The review and analysis of the UBET Alternative did not involve information that warrants providing an additional opportunity for public notice or comment.

Comment Number NG-7-8

Response The Supplemental EIS relies on current information and tools to forecast 2020 transit ridership and uses the latest official WFRC travel models, which are supported by the Federal Transit Administration for use in ridership forecasting in the north corridor and validated with respect to actual TRAX ridership. For example, the WFRC models estimate that ridership on the TRAX University of Utah extension is about 2,200 riders a day. Actual daily ridership is about 2,100, indicating that the model accurately forecasts actual rail transit ridership in the region. This same model was calibrated to observed data for the North/South and University lines. The model shows 28,500 daily riders on those two lines, and observed data shows 29,000 daily riders, indicating that the model accurately replicates actual rail transit ridership in the region.

The Supplemental EIS forecasts closely resemble transit use in existing Salt Lake rail corridors. Presently, TRAX daily mode share in the South Corridor is 8 percent in the narrow I-15/TRAX corridor, and 5 percent in the wider I-15/215/TRAX corridor. In the North Corridor, where commuter rail and BRT will provide the premium transit service, the Supplemental EIS forecasts 7 percent transit ridership in the narrow I-15/transit corridor, and 5 percent in the wider I-15/Legacy/transit corridor, which is likely a reflection of the geographic factors noted by the commenter. The transit shares are predicted to be similar for the North and South Corridors in spite of the fact that the population of Davis and Weber Counties combined is less than half the population of Salt Lake County.

Comment Number NG-7-9

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-10

Response The Draft Supplemental EIS (Section 3.2.2, *Results of Additional Alternatives Evaluation*) presented the results of evaluation of two Redwood Road Arterial Alternatives, both of which were recommended during the public scoping process. The more robust Redwood Road Arterial Alternative assumed an eight-lane, partially controlled facility in the southern portion from I-215 to 500 South and would follow the Legacy Parkway Alternative E alignment in the northern portion. Traffic analysis of this robust Redwood Road Arterial Alternative showed that it did not meet the project purpose and need. The reasons for this are disclosed in Section 3.2.2. Another Redwood Road arterial alternative, proposed by UBET and denoted the Redwood Road Arterial Boulevard Sub-Alternative, was recommended during preparation of the Draft Supplemental EIS. The Redwood Road Arterial Boulevard Sub-Alternative was also evaluated in the Draft Supplemental EIS. It is a variation on the more robust Redwood Road Arterial Alternative. It would be a

boulevard-type facility. It would widen Redwood Road through North Salt Lake and Woods Cross, extend a new arterial road north of 500 South in Woods Cross to the west side of the power utility corridor, then turn east to terminate at Parrish Lane in Centerville. It would include frontage roads to accommodate access to driveways and businesses along Redwood Road. This alternative was also evaluated and screened out because it did not meet the project purpose and need.

The alternative presented by UBET as their *Citizens' Smart Growth Alternative* (UBET Alternative) was not presented until the public hearing in January 2005, after the release of the Draft Supplemental EIS; consequently, evaluation of it was not included in the Draft Supplemental EIS. Evaluation of the UBET Alternative presented by UBET during the circulation of the Draft Supplemental EIS is presented in Chapter 3, *Alternatives*, of the Final Supplemental EIS and in Master Responses 5 and 6 in Section 2 of this response to comments volume.

Section 4(f) applies to FHWA's decision on the proposed action. In accordance with 23 CFR 771.135(a)(1), the Administration may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

(i) There is no feasible and prudent alternative to the use of land from the property; and

(ii) The action includes all possible planning to minimize harm to the property resulting from such use.

This regulation applies to FHWA's selection/approval of alternatives in this NEPA process. The Final EIS included a Section 4(f) determination in accordance with 23 CFR 771.135; as a result of the reevaluation, this Supplemental EIS supplements that analysis.

Chapter 5, *Section 4(f) and 6(f) Evaluation*, of the Supplemental EIS presents an evaluation of the alternatives' potential use of Section 4(f) properties. Section 4(f) properties, along with wetlands, property displacements, hazardous waste sites, and other constraints, were considered in the early phases of alignment development—that is, as the alternatives advanced from the conceptual stage to the alignment stage—to minimize effects on these resources.

"Use" of Section 4(f) properties under the Section 4(f) guidance is determined on the basis of the type of Section 4(f) resource potentially affected. Historic buildings are treated differently than buried archaeological sites. If the information contained in the buried archaeological site can be extracted through excavation prior to construction or "use" of the site, then it is not considered a 4(f) use. The data recovery eliminates the 4(f) resource. Taking of a historic structure, or of a portion of the property on which the building stands, is considered a 4(f) use. Several historic buildings exist along the Redwood Road alignment.

The mere presence of a Section 4(f) resource does not preclude an alternative as potentially reasonable. If, however, there is an alternative that would have fewer impacts on Section 4(f) resources, then FHWA cannot adopt the alternative with greater Section 4(f) impacts unless extraordinary circumstances exist. The Redwood Road and UBET Alternatives have the potential for a greater number of impacts on 4(f) resources than the Great Salt Lake regional alignment alternatives,

although they were not rejected on this basis. Rather, as described in Master Response 5 in Section 2 of this response to comments volume, the Redwood Road and UBET Alternatives were rejected because they did not meet purpose and need.

At the time the Draft Supplemental EIS was issued, only the more robust Redwood Road Arterial Alternative, the Redwood Road Arterial Boulevard Sub-Alternative, and the Parkway Facility Adjacent to Redwood Road Alternative had been evaluated along that alignment, and review of Section 4(f) resources was done as part of that evaluation. As noted above, an evaluation of the UBET Alternative is included in Chapter 3, *Alternatives*, of the Final Supplemental EIS.

Comment Number NG-7-11

Response Section 5.5, *Use of Section 4(f) and 6(f) Properties*, of the Supplemental EIS provides the evaluations for direct and constructive use of the Farmington Bay Waterfowl Management Area (FBWMA) and Bountiful City Pond. Based on these evaluations it was determined that there is no constructive use of FBWMA or Bountiful City Pond.

Comment Number NG-7-12

Response Section 5.4.1, *Recreation, Wildlife, and Waterfowl Refuge Resources*, of the Supplemental EIS, describes the Section 4(f) status of the Bountiful City Pond and the improvements made to the recreation facilities since issuance of the Final EIS, referring to a September 23, 2004, letter from the City of Bountiful (Appendix A of the Supplemental EIS). The letter states that the City does not have plans for developing additional recreation on the remaining portions of the property, specifically the southeast and southwest corners. The letter further states that these remaining portions of the property are intended for other, non-recreational uses and, as a dual-use facility, these portions of the property are not protected under Section 4(f). As described in Section 5.5, *Use of Section 4(f) and 6(f) Properties*, access to the Bountiful City Pond would be maintained, albeit with a slight increase in travel distance and time. This minor increase is not expected to affect use of the recreation facilities. It is appropriate, under Section 4(f), for FHWA to consider the information provided by the governmental entity that administers a property.

Comment Number NG-7-13

Response See the response to comment NG-6-11.

Comment Number NG-7-14

Response See the response to comment NG-7-10. The UBET Alternative was screened out because it did not meet the primary project purpose and need.

Comment Number NG-7-15

Response The federal lead agencies asked the State of Utah to provide them with additional information about its authority to acquire the Legacy Nature Preserve and to retain the Preserve if the transportation project was eliminated. The Utah Office of Attorney General has advised the federal lead agencies that because the Legacy Nature Preserve was acquired under condemnation authority exercised to achieve a transportation project, the State will be unable to retain the Preserve lands in the absence of a transportation purpose. Accordingly, the brief explanation of state law presented in the Supplemental EIS was correct. This analysis is not related to the filling of wetlands in connection with the initial construction activities. Those

impacts will be addressed in either the modified 404 permit, should one be issued for the proposed action, or through a subsequent arrangement between the Corps and UDOT. See Section 3.6, *Land Acquired to Date*, of the Supplemental EIS.

Neither the UBET Alternative nor any other alternative was screened out as a result of the assertion that the currently proposed Legacy Nature Preserve could be maintained only in conjunction with the currently proposed Legacy Parkway.

Comment Number NG-7-16

Response The UBET Alternative, as proposed by UBET at the public hearing and submitted to the lead agencies in March 2005, is evaluated and documented in Chapter 3, *Alternatives*, of the Final Supplemental EIS. See Master Response 5 in Section 2 of this response to comments volume

Comment Number NG-7-17

Response A comprehensive search was conducted to locate all studies conducted to evaluate median width and accident rates, all of which are cited in the Final Supplemental EIS and supporting right-of-way technical memorandum. As noted in Section 2.1, *Right-of-Way Issues*, of the Final Supplemental EIS, these studies all support the UDOT and AASHTO design guidelines for median width, thereby supporting the selection of a 50-ft median width for the proposed Legacy Parkway. Of note, in February 2005, UDOT updated its Standard Drawing DD 4 (Geometric Design for Freeways) to show a fixed 50-ft median width on new, rural freeways based on the studies noted above. Not adhering to federal or state design standards would require a design exception and would compromise driver safety.

For comparative purposes, the federal agencies evaluated a right-of-way width reflecting a 26-ft median, composed of a concrete barrier and two 12-ft shoulders, although such a median is not consistent with UDOT design standards. The use of a concrete barrier would require alternate water quality treatment methods, which in turn would result in additional impacts on wetlands (HDR Engineering 2005a). See Section 2.1.2.2, *Median Width Evaluation*, of the Supplemental EIS for more discussion.

See the response to comment NG-6-2 regarding median barriers and speed limits.

Comment Number NG-7-18

Response The fact that a slower speed limit may decrease accidents is not dispositive to the median analysis. As described in the response to comment NG-7-17, studies indicate that at all highway speeds, an open median was safer than a median with a barrier. Thus, while a lower speed limit might reduce accidents, a lower speed with an open median would reduce accidents even further. The use of a closed median (barrier) and narrower right-of-way does not dictate the speed limit. The speed limit assigned to the roadway is determined by the agency with jurisdiction over the facility; in this case UDOT would be responsible for determining the speed limit on the facility. The speed limit is based on the functional classification of the roadway, adjacent land use, and topography.

Exhibit 23-2 of the Highway Capacity Manual 2000 shows the relationship between LOS, capacity, and free-flow speed. The actual capacity of a facility is the LOS E/F threshold (far right column). As the design speed of a facility increases, so do the free-flow speed and the capacity. A facility with a 65-mph design speed,

therefore, has a higher free-flow speed and higher capacity than a facility with a 55-mph design speed.

The comment incorrectly states that the Draft Supplemental EIS used peak-hour design criteria. The travel demand modeling conducted for the proposed action demonstrates the need for additional capacity for the 3-hour peak period, rather than just the peak hour. The 3-hour peak period demand, evaluated against the 3-hour capacity, would provide an average LOS D for the Legacy Parkway, as proposed. The Supplemental EIS relies on comparisons of demand and capacity for the LOS evaluation, as opposed to comparisons of speed and capacity.

A comprehensive search was undertaken to locate all studies conducted to evaluate median width and accident rates. See the right-of-way technical memorandum for the complete studies.

These studies indicate that accident rates increase when objects, such as a median barrier, are introduced, and decline as the median width increases. In view of these findings, the use of a closed median was not implemented.

Comment Number NG-7-19

Response There are currently no design standards or guidelines for parkways under AASHTO. A parkway is defined in the following ways: A broad landscaped highway, often divided by a planted median strip (Dictionary.com); a wide scenic road planted with trees (Dictionary.com); a broad landscaped thoroughfare (Merriam-Webster); arterial highway for noncommercial traffic, with full or partial control of access, and usually located within a park or ribbon of park-like developments, or a wide road, usually divided, with an area of grass and trees on both sides and in the middle (Cambridge Dictionary). Due to the lack of specific guidelines for a Parkway, the use of AASHTO's rural freeway guidance is appropriate.

Legacy Parkway provides access to recreation along the corridor. Access is provided to Bountiful Pond, FBWMA, and local area trails. Access to Bountiful Pond will be improved with Legacy Parkway, because access is currently via an unimproved road, while the new access will be via a two-lane frontage road between 500 South and the Landfill. This same roadway provides improved access to the FBWMA. Access to Bountiful Pond from the trail will be along the frontage road between 500 South and the Bountiful Landfill. Limiting access to the Legacy Nature Preserve was a decision made by the management team in order to protect this area from potential impacts. The Corps will determine whether access to the Legacy Nature Preserve is appropriate, in the Section 404 permit.

The availability of other, more attractive barriers does not affect the analysis comparing the safety of an open median to that of a closed median with a barrier; an open median is safer, regardless of how attractive the barrier is.

Comment Number NG-7-20

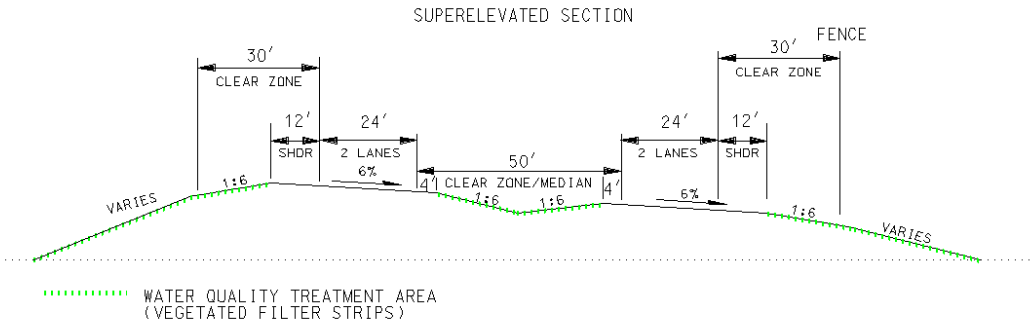
Response The UDOT design standard for medians on new, rural freeways is 50-feet. (See the response to NG-7-17.) However, for comparative purposes, the Final Supplemental EIS evaluates the relative impact of using a 26-ft median width and alternative water quality treatment method. See the response to comment NG-6-2 for a discussion of median width.

As noted in Section 2.1.2.2, *Median Width Evaluation*, of the Final Supplemental EIS, future travel lanes are neither proposed nor reasonably foreseeable for the Legacy Parkway project. In fact, as described in Section 3.2.2, *Results of Additional Alternatives Evaluation*, the Final Supplemental EIS analysis determined that a six-lane Legacy Parkway facility should be eliminated from detailed considered because additional capacity (beyond four lanes) is not needed to meet the project purpose and need.

Comment Number NG-7-21

Response The cross sections in the Final Supplemental EIS were simplified to represent a cross section used on straight, flat sections of the proposed highway alignment. This simplification involved omitting the analysis of roadway "superevelation." Superelevation can be compared to banking along a racetrack. (See the following figure for graphic view of superelevated section.). Superelevation occurs along all horizontal curves in the alignment. The inside shoulders are both at a 2 percent cross slope into the median, not toward the side slopes. The median would catch all runoff from the inside shoulders as well as the runoff from the entire paved area in areas of superelevation. In these areas the pavement cross slope changes to facilitate maneuvering along a curve without loosing traction along the pavement. The roadway is superelevated along approximately 30 percent of its length. Thus, along much of the roadway, runoff from the travel lanes would enter the vegetated median. The remainder of the runoff would be treated by the vegetated filter strips on the side slopes.

See also the response to comment NG-6-3.



Comment Number NG-7-22

Response The primary objective of planning stormwater runoff management for Legacy Parkway was to eliminate concentrated stormwater discharges to the extent feasible. This approach was determined in coordination with UDEQ. Eliminating point discharges would have positive effects on the surrounding area by limiting erosion and instability and by removing suspended solids (thereby reducing turbidity).

While wetlands typically can serve to filter water, neither the specific tolerance capacity of individual wetlands and wetland types to various pollutants nor the concentrations of pollutants that can result in detrimental effects are known. Individual wetlands have distinct characteristics and functions, which in turn affect the feature's capacity for filtering water.

The location of wetlands also plays a role in their contribution to water quality. The wetlands in the project study area do not occur in a linear distribution adjacent to the right-of-way, but are distributed in groups or complexes. Consequently, median vegetated filter strips would still be needed in areas without wetlands. Alternating between interior and exterior filtration as dictated by the presence of wetland complexes would entail complex changes in slope, and is not feasible from an engineering perspective. Moreover, because of this irregular distribution of wetlands, runoff water would likely have to be routed to the wetland complexes for discharge into the wetlands. Additionally, each wetland's capacity and filtration characteristics would have to be evaluated individually. Finally, the point discharges necessitated by this approach could cause soil erosion at the point of discharge as well as groundwater table instability.

Thus, to reduce the potential to harm the surrounding wetlands, and because it would be difficult to quantify the overall treatment effectiveness of the wetlands without actually designing the stormwater controls and studying each individual wetland, even with this method, water would still be treated to the extent practical prior to leaving the right-of-way.

Comment Number NG-7-23

Response As noted in Section 2.1.2.2, *Median Width Evaluation*, of the Final Supplemental EIS, future travel lanes are neither proposed nor reasonably foreseeable for the Legacy Parkway project. In fact, as described in Section 3.2.2, *Results of Additional Alternatives Evaluation*, the Final Supplemental EIS analysis determined that a six-lane Legacy Parkway facility should be eliminated from detailed considered because additional capacity (beyond four lanes) is not needed to meet the project purpose and need. The reference in the Final Supplemental EIS to NEPA review requirements for any proposed future expansion was made simply to disclose to the public the environmental review requirements, not to indicate that UDOT intends to add additional lanes to the Legacy Parkway median in the reasonably foreseeable future.

See the response to comment NG-6-2 for a description of the proposed median width.

Comment Number NG-7-24

Response Regarding separation of the parkway and trail rights-of-way, see the response to comment GP-742-14.

The Denver and Rio Grande railroad is still in active use in the southern portion of the North Corridor to 400 North in West Bountiful; consequently, it is not available for use. UTA has applied for funds from WFRC to convert the railway grade to a trail. Although the D&RG corridor is not available for a trail associated with Legacy Parkway, it may become a trail in the future.

Comment Number NG-7-25

Response UDOT prepared cost estimates at various stages of development of project alternatives: the regional corridor stage, the conceptual alignment stage, and the build alternative stage, allowing detailed analysis. Consistent cost estimating methodologies were employed at each stage of alternatives development. The costs prepared at each stage used progressively more detailed information on both the alignment location (providing progressively more accurate estimates on the total

number and types of impacts) and the design features for the specific alignment (including the number of bridges), allowing better projections for construction material quantities.

More detailed cost estimates were prepared for the five conceptual alignments within the D&RG regional corridor and one alignment (Alternative E) within the Great Salt Lake regional corridor. To situate the conceptual D&RG alignments, the project team used aerial photography that showed the major physical constraints in the corridor (refineries, developments, public facilities, and large wetland areas). The conceptual alignments are, however, less detailed than the Legacy Parkway build alternative alignments, which used survey information (elevational contours and detailed surface constraints) and preliminary highway design to establish highway footprints, providing more detailed impact analyses and initial construction quantities. Table 2.2-9 of the Supplemental EIS summarizes the cost estimates prepared for these conceptual alignments, as well as an estimate for Alternative E using the same cost estimating methodology. Appendix G, *Updated Cost Estimates*, of the Final Supplemental EIS provides overall cost estimates for the regional corridor alignments as well as detailed cost estimates for the build alternatives: Alternatives A, B, C, D, and E.

Comment Number NG-7-26

Response The cost estimates used in the Supplemental EIS for regional corridors, conceptual alignments, and build alternatives were prepared to evaluate alternatives. Appendix G, *Updated Cost Estimates*, of the Final Supplemental EIS presents these cost estimates. These estimates include the costs for highway construction (materials and labor costs), property acquisitions for the highway right-of-way and mitigation land (Legacy Nature Preserve), and wetland enhancement activities.

In contrast, UDOT's Executive Director reported the approximate total budget for the Legacy Parkway and Nature Preserve project, which includes all past and future costs associated with the proposed action. Thus it presents a very different cost than the above-mentioned estimates. In addition to construction materials, right-of way costs, and mitigation, the project budget includes environmental analysis and permitting; public involvement; construction program management and environmental compliance oversight (including UDOT personnel, consultants, and legal council); an overall project risk and inflation contingency; and contractor preaward engineering and incentives. The difference between the total project budget ($685 million) and the cost estimate for build Alternative E as reported in the Supplemental EIS ($426 million), is $259 million. With some limitations, this amount could be added to the projected cost of any alternative to determine the total project budget for that alternative. Appendix G, *Updated Cost Estimates*, has added to the Final Supplemental EIS to explain this matter in more detail.

Comment Number NG-7-27

Response The possibility of separating the trail from the Legacy Parkway right-of-way was examined in detail in Section 3.3.4, *Alternatives without Trail Component or Separate Trail Facility*, of the Supplemental EIS and rejected for the reasons stated therein. Regarding a narrower right-of-way, see the response to comment GP-303-1. Section 2.2.2.1, *Development of D&RG Conceptual Alignments*, of the Supplemental EIS fully discusses the "variable ROW width that is only as wide as necessary" for the D&RG alternative, which was prepared in response to the court

opinion. The D&RG alternative was screened out because of high community impacts.

Comment Number NG-7-28

Response See the responses to comments and NG-7-18 and GP-303-1.

Comment Number NG-7-29

Response The criteria used to locate the D&RG alignments are typical constraints that are considered in establishing alternative alignments. Some are based on federal regulations; others are specific to the corridor under consideration. As described in Section 2.2.2.1, *Development of D&RG Conceptual Alignments*, of the Supplemental EIS, Section 4(f) of the U.S. Department of Transportation Act of 1966 requires selection of alternatives that avoid designated parks, recreation areas, wildlife refuges, and historic sites. The D&RG railroad right-of-way is eligible for listing in the National Register of Historic Places (NRHP) and subject to Section 4(f) regulations. More importantly, the rail is active south of 400 North in West Bountiful and serves oil refinery properties within the corridor, as mentioned in Section 2.2.2.1. Using the railroad right-of-way in this area would require relocating the D&RG tracks to continue to serve these facilities. The West Bountiful Golf Course is located just north of 400 North and abuts the west side of the D&RG railroad right-of-way. This golf course is publicly owned and also subject to 4(f) regulations.

The additional criteria used to locate the D&RG alignments were selected with the express purpose of preventing impacts and estimated costs from being overstated. As mentioned in Section 2.2.2.1, the federal lead agencies determined that a southern termini interchange where the D&RG tracks meet I-215 would be impractical. From the southern interchange to the north, the D&RG alignment links were placed to avoid the most densely developed areas, avoid major oil refineries, and have a right-of-way that is only as wide as necessary to minimize wetland impacts and relocations. The evaluation showed that the impacts greater for the east-west D&RG links than for Alternative E. However, this increase is a reflection of the developed nature of the corridor and not a deliberate attempt to exaggerate environmental problems. In addition, a reasonable number of D&RG alignments were evaluated to ensure a range of impacts and that a least damaging alignment was considered within the D&RG corridor. See Section 2.2.4, *Conclusions*, of the Supplemental EIS for a discussion of practicability considerations used in evaluating D&RG regional corridor alignment alternatives, and Section 3.2.1, *Criteria for Evaluating Additional Alternatives*, for a discussion of the reasonableness and feasibility screening criteria used to evaluate alternatives.

Comment Number NG-7-30

Response See the response to comment NG-7-10. However, the D&RG regional corridor was screened out on the basis of logistics in addition to Section 4(f) and historic property considerations. Impacts on Section 4(f) resources were analyzed for the 2000 Final EIS analyzed despite the fact that Section 4(f) likely did not apply to the proposed action because no federal funds were being used. The Supplemental EIS continues this analysis.

Comment Number NG-7-31

Response As stated in Section 4.16.2.4, *Historic Railroad Corridors*, and Section 5.4.2, *Historic and Archaeological Resources*, of the Supplemental EIS, the D&RG Railroad is eligible for listing in the NRHP under Criterion A, and is therefore eligible for protection under Section 4(f). The criteria for inclusion in the NRHP are provided in Section 4.16.1.3, *National Register of Historic Places – Criteria for Eligibility*, of the Final Supplemental EIS. Section 4(f) applies to historic properties only when the property is included in or eligible for listing in the NRHP, as stated in Section 5.2.1, *Section 4(f)*. This determination was made in consultation with the Utah SHPO subsequent to publication of the Final EIS. Section 2.2.2.1, *Development of D&RG Conceptual Alignments*, provides information regarding development of the D&RG alignments—specifically that the D&RG Railroad is an active railroad line south of 400 North in West Bountiful, and that the D&RG alignments avoid the D&RG Railroad right-of-way in this area for that reason. The D&RG Railroad provides a freight transportation link to the refineries in North Salt Lake, Woods Cross, and West Bountiful. This information is included in Section 2.2.2.1, *Development of D&RG Conceptual Alignments*, and Section 5.4.2, *Historic and Archaeological Resources*. Accordingly, the statement that the Supplemental EIS asserts that the alignments cannot be located in the D&RG right-of-way due to the eligibility of the D&RG railroad for listing in the NRHP is erroneous. Utilizing the railroad right-of-way would require relocation of the active section of railroad tracks so that the railroad could continue to serve the area's refineries. Refer to Section 2.2, *Denver & Rio Grande Corridor Evaluation*, for further information on the evaluation of the D&RG corridor.

Comment Number NG-7-32

Response See the responses to comments NG-7-24 and NG-7-31.

Comment Number NG-7-33

Response An assessment of the criteria that were used to determine whether the D&RG regional corridor should be carried forward for detailed consideration in the Final Supplemental EIS is presented in both the D&RG technical memorandum and Section 2.2.3, *Evaluation of D&RG Conceptual Alignments*, of the Final Supplemental EIS. In summary, impacts on existing development (including community cohesion), impacts on wetlands, and cost were used to evaluate D&RG conceptual alignments.

As summarized in Table 2.2.1 of the Final Supplemental EIS, relocation impacts on existing development under the D&RG conceptual alignments range from 149 to 279 residential and business relocations and from 13 to 28 major utility relocations. The D&RG conceptual alignments would also affect between 36 and 70 platted residential lots and sever 30 percent of the West Bountiful community to the west of the D&RG conceptual alignments. The relocation impacts on existing development under Alternative E would be 18 residential and business relocations and 21 major utility relocations. There would be no impacts on newly platted residential lots, and there would be minimal impacts on communities adjacent to the Alternative E alignment.

The communities in south Davis County have been involved in the Legacy Parkway planning process since the Major Investment Study in 1998 and, with the exception of Centerville City, all support the Alternative E alignment. These

communities have consistently expressed preference for the westernmost possible alignment in order to maintain geographical cohesion. Community leaders have detailed knowledge about the social composition of various sections of the D&RG corridor. As part of designing and implementing the proposed action, UDOT endorses a context-sensitive solution that addresses transportation needs as well as safety concerns and scenic, environmental, and community values. Therefore, contacting community leaders is an important component of a community cohesion analysis and project implementation.

Soliciting comments through a community leaders' survey and the open forum of the CPIC meetings was only one method used to evaluate social impacts, including community cohesion, of the alignments within the D&RG regional corridor. Chapter 3 of the D&RG technical memorandum quantifies social impacts associated with constructing an alignment within the D&RG regional corridor by describing the number of residential and business relocations, the amount of a particular community's land area separated by each D&RG conceptual alignment (including school service areas), travel pattern disruptions, and noise and visual impacts. The technical memorandum also describes the physical barriers that would be created as a result of any one of the D&RG alignments. All these factors, in addition to public comments, were considered in the agencies' qualitative evaluation of community cohesion effects.

In addition, as mentioned above, alignments within the D&RG regional corridor were also evaluated to determine their impacts on aquatic resources and their cost relative to Alternative E. As summarized in Section 2.2.4, *Conclusions*, of the Final Supplemental EIS, an alignment in the D&RG regional corridor would cost between $134 million and $256 million more than the conceptual alignment associated with Alternative E. These additional costs, as well as the additional relocation and community cohesion impacts described above, led to the federal lead agencies determination that an alignment in the D&RG regional corridor was not a reasonable alternative under NEPA or practicable under the CWA and therefore was not evaluated in detail in the Final Supplemental EIS.

Comment Number NG-7-34

Response As part of the environmental analysis for the proposed action, Chapter 4, *Supplemental Environmental Analysis*, of the Supplemental EIS discusses the socioeconomic resources and community cohesion in the project study area and the potential effects on the surrounding communities. Standard industry practices were used to develop the evaluation methodologies for the resources that were considered.

Comment Number NG-7-35

Response See the response to comment NG-7-33.

Comment Number NG-7-36

Response Community cohesion is a social impact and is one component considered under the "impacts to existing development" criterion in the Corps' practicability evaluation. Under the CWA, "practicable" is defined as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.3). Although logistics is not specifically defined in the CWA, Webster's New World Dictionary defines the term as "the

managing of the details of an undertaking." For the purposes of evaluating alternatives in the Supplemental EIS, the Corps considers that *logistics* includes all the details associated with implementing an alternative, including not only direct construction impacts such as relocation of homes or businesses, but also resulting neighborhood changes associated with the alternative. This definition of logistics, for determining the practicability of alternatives, is consistent with the reasoning in the court decision, from which the following statement is excerpted.

> *Practicable* is defined as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 DVR Section 230.3[q]). In its ROD, the COE found the D&RG Alignment to be infeasible because of its high cost and high impact on existing development (I Aplee. App. At 44–45). *Merriam-Webster's Collegiate Dictionary* defines infeasible as impracticable (Id. At 618 [9th ed. 1991]). Therefore, the Appellants are incorrect in saying that the Federal Agencies applied the wrong legal standard in rejecting the D&RG alternative. The Appellants further argue that even if the impracticable test was applied, it was not met (Aplt. Br. At 23). We can set aside the COE's action only if we find that the COE abused its discretion, or acted arbitrarily, capriciously, or contrary to law (5 USC Section 706[2][A]). Impact on existing development would appear to fall within both the cost and the logistics portion of the practicable definition.

A particular alternative's social impact on community cohesion can be difficult to quantify. Section 2.2.3.1, *Impacts on Existing Development*, of the Supplemental EIS attempts to quantify overall social impacts by describing the number of residential and business relocations, the amount of a particular community's land area (including school service areas) separated by each D&RG alignment, travel pattern disruptions, and noise and visual impacts. Section 2.2.3.1 also describes the physical barriers that would be created as a result of any one of the D&RG alignments. These quantifiable aspects, combined with public comments, are considered in the lead agencies' qualitative evaluation of community cohesion effects.

Comment Number NG-7-37

Response The transit integration strategy for the corridor used in the Supplemental EIS goes beyond the robust transit concept proposed by UTA and by WFRC in its adopted 2030 long range transportation plan. The forecasting methods used in the Supplemental EIS are enhanced to be even more sensitive to transit benefits than the standard WFRC model approved by FTA. The results closely match local and national experience with transit investments.

The modeling results presented in the Supplemental EIS have been verified through comparisons with local and national experience on the effects of new transit investments on transit ridership. In the Salt Lake region and in comparable urban areas, the Supplemental EIS forecasts closely resemble transit use in existing UTA rail corridors. Currently, TRAX daily mode share in the south corridor is 8 percent for the narrow I-15/TRAX corridor, and 5 percent for the wider I-15/215/TRAX corridor. In the North Corridor, where commuter rail and BRT will provide the premium transit service, the Supplemental EIS forecasts 7 percent transit for the narrow I-15/Transit corridor and 5 percent for the wider I-15/Legacy/Transit corridor.

The Supplemental EIS integration analysis transit forecasts also resemble transit use in comparable corridors in other cities. The Supplemental EIS forecasts that about 25 percent of downtown commuters from the North Corridor will use transit. This falls within the range of current transit shares for larger western cities: 35 percent for Denver, 18 percent for San Diego, and 31 percent for Portland.

Many travelers through the North Corridor are not headed to downtown Salt Lake, and transit use by these travelers is lower than use by downtown commuters. As a result, the average mode share for all travelers crossing the Woods Cross screenline is projected to be between 5 and 6 percent. This compares favorably with transit ridership in other western rail corridors that serve a comparable share of downtown-oriented, regional, and interregional travel patterns. For example, transit shares in the Dublin and Willow Pass BART corridors and Altamont commuter rail corridor in the San Francisco Bay Area range from 2 to 6 percent.

The transit strategies included in the Supplemental EIS integrate new transit investments with other components of the transportation system and supportive transportation policies, including more frequent commuter rail service, express bus, BRT, "seamless transfers" among transit vehicles, feeder bus improvements, transit fare discounts, downtown parking price hikes, and transit-supportive land use. Regional and local plans have made great strides in incorporating transit-supportive land use. These include balance between jobs and housing in the corridor, with jobs growing at more than twice the rate of population over the next 15 years, as well as special efforts by corridor communities to place new development near transit, shifting growth that could accommodate more than 8,000 jobs and residents to transit station areas.

Regarding the purpose of the integration analysis, see the response to comment NG-7-40.

Comment Number NG-7-38

Response

The transit ridership forecasting presented in the Supplemental EIS was performed within the WFRC travel model, which had been updated and recalibrated based on TRAX actual performance using the 2002 UTA on-board ridership survey. As an example of the model's accuracy, the model estimated ridership on the TRAX University of Utah extension at about 2,200 riders per day, and actual ridership is about 2,100 per day. This same model was calibrated to observed data for the North/South and University lines. The model shows 28,500 daily riders on those two lines; observed data shows 29,000 daily riders. The model used for the Legacy Parkway Supplemental EIS has not been found to under-predict TRAX ridership.

The transit forecasts in the Supplemental EIS also closely resemble transit use in existing Salt Lake rail corridors. Presently, TRAX daily mode share in the South Corridor is 8 percent for the narrow I-15/TRAX corridor, and 5 percent for the wider I-15/215/TRAX corridor. In the North Corridor, where commuter rail and BRT will provide the premium transit service, the Supplemental EIS forecasts a 7 percent transit mode share for the narrow I-15/Transit corridor and a 5 percent share for the wider I-15/Legacy/Transit corridor.

The Supplemental EIS transit forecasts for the North Corridor also closely resemble transit use in comparable corridors in other cities. The Supplemental EIS forecasts that about 25 percent of commuters from the North Corridor to downtown Salt Lake City will use transit. This falls within the range of current transit shares

for larger western cities: 35 percent for Denver, 18 percent for San Diego, and 31 percent for Portland. Because many travelers through the North Corridor are not headed to downtown Salt Lake, the average mode share for all travelers crossing the Woods Cross screenline is projected to be between 5 and 6 percent. This compares favorably with transit ridership in other western rail corridors that serve a comparable range of downtown-oriented, regional and interregional travel patterns. For example, transit shares in the Dublin and Willow Pass BART corridors and Altamont commuter rail corridor in the San Francisco Bay Area range between 2 and 6 percent.

The *Report on the Citizens' Smart Growth Alternative to the Proposed Legacy Parkway* (Smart Mobility, Inc., and R. B. Cervero. 2005. March. Berkeley, CA.) provides no specific citations of corridors that are similar to the North Corridor that achieve transit mode shares approaching 50 percent. Moreover, it appears that the comment may be comparing regional shares with shares of travelers going to a central business district. The mode shares projected in the Supplemental EIS are well supported by credible modeling and confirmed through comparisons to comparable corridors in the Salt Lake region and other urban areas. See also the response to comment NG-7-38.

Comment Number NG-7-39

Response See the response to comment NG-7-37.

The integration analysis conducted for the Supplemental EIS reflects integration of various transportation modes and is not intended to "maximize the performance of the transit system." To respond to suggestions raised in scoping and to realistically and accurately project the potential for transit in the corridor, the integration analysis modeled a transit scenario with many transit enhancements. The transit integration scenario presented in the Supplemental EIS goes beyond the robust transit concept proposed by UTA and WFRC in the WFRC long range transportation plan. The linkages addressed in the Supplemental EIS analysis are not limited to linkages between Legacy Parkway and transit, but rather, the integration analysis looked at the entire North Corridor network.

The locations of transit service and access improvements in the Maximum Future Transit Alternative are specifically oriented toward existing and future jobs and residences in the North Corridor. This is true of both the baseline future transit planned for the corridor, as described in the WFRC long range plan, and the transit enhancements included in the integration assessment's maximum transit enhancements. The following enhancements were assumed for the maximum transit scenario.

- More frequent commuter rail service.
- Express bus service on I-15 HOV lanes.
- Bus rapid transit (BRT) through the central areas of the North Corridor.
- Expanded local circulator and feeder bus service sufficient to place 95 percent of corridor population within walking distance of bus service.
- "Seamless transfers" among transit vehicles so that feeder bus users have smooth access to the corridor's premium transit commuter rail and BRT.
- Transit fare discounts.

- Price hikes in downtown parking.
- Transit-supportive land use clustered around commuter rail and BRT stations.

Comment Number NG-7-40

Response The court was quite clear that it wanted the federal agencies to include mass transit, along with Legacy Parkway and reconstruction of I-15, in the sequencing analysis. There was no indication that it was an issue of investment. The question of investment has already been answered, in part, in the Commuter Rail EIS, which concluded that constructing commuter rail was a sound investment even with Legacy Parkway incorporated into the baseline conditions.

Legacy Parkway and expansion of mass transit, including commuter rail, are two of the major components of the Shared Solution developed to address transportation needs in the North Corridor. The court's opinion was clear on the need for all parts of the Shared Solution by 2020. The analysis of the No-build Alternative clearly demonstrates that severe congestion will exist in the North Corridor if the Shared Solution in its entirety is not built by 2020. Intentionally causing severe congestion on I-15 with the aim of achieving high ridership on transit would constitute a failure to meet the public's need for travel.

The sequencing analysis accomplished the objectives established by the court. The analysis identified the tradeoffs of sequencing transit before, concurrently with, or after constructing Legacy Parkway. This analysis will be considered by the federal agencies in their respective decisions.

As was true of TRAX, the sequencing analysis determined that, compared to typical levels in the corridor, there would be very high ridership on mass transit during the reconstruction of I-15 in the absence of Legacy Parkway. The difference between such a course of action in the North Corridor and in Salt Lake County is that in Salt Lake County a substantial number of parallel roadways—some of which were improved prior to the I-15 reconstruction project—were available to provide relief while I-15 was being reconstructed. There are no such facilities in the North Corridor. Accordingly, reconstruction of I-15 in the North Corridor with mass transit providing the only means of congestion relief would lead to severe congestion on the roadway system and extremely high costs to the traveling public.

Comment Number NG-7-41

Response The wildlife analysis fully addresses the remand of the court to evaluate the impacts of the proposed action on wildlife in the GSLE, particularly migratory species, at distances greater than 1,000 ft from the project right-of-way. All migratory species that use or could potentially use the project study area, their habitats, and their uses of those habitats were identified and described in Chapter 2 of the wildlife technical memorandum. Impacts on all special-status species, including threatened and endangered species, within the project study area and up to and beyond 1,000 ft from the project study area were disclosed in extensive detail in Chapter 3 of the wildlife technical memorandum.

As described in the wildlife technical memorandum and in the Supplemental EIS, the wildlife analysis conducted for the Supplemental EIS utilized three basic geographic zones: project-level study area, regional study area, and GSLE. For particular impacts on wildlife, the geographic zone of evaluation was specifically

related to the zone of the particular impact. Analysis of impacts on wildlife based on habitat change and loss is a valid scientific method recognized by USFWS and UDWR as well as by many expert conservation biologists. See the response to comment NG-7-106.

This review also presents and analyzes the comprehensive results of UDWR's 5-year migratory waterbird survey (Figure 2-9; Paul, D., and A. E. Manning. 2002. *Great Salt Lake Waterbird Survey: Five-year report [1997–2001]*. Unpublished confidential report. Great Salt Lake Ecosystem Project), showing the distribution and abundance of these species throughout the GSLE. The analysis has been revised to include additional analyses using UDWR's avian monitoring of the proposed Legacy Nature Preserve (Dolling, J. S. 2003. *Baseline Avian Monitoring for the Proposed Legacy Nature Preserve March 2002 to February 2003*. Final. December. Submitted to HDR Engineering, Inc.; see the response to comment NG-1-119). In combination, these studies clearly document the low abundances and densities of migratory species within the project study area compared to other areas of similar habitat throughout the GSLE (Figures 2-8 and 2-9 of the wildlife technical memorandum).

In view of these results and the parallel analysis of migratory bird habitat availability in the GSLE vs. loss/change in the project study area (Chapter 3 of the wildlife technical memorandum), it is clear that, barring an ecosystem-wide impact from a catastrophic event, implementation of the proposed action would not notably affect the long-term viability of any of the migratory bird species in the GSLE or project study area. It should be noted that potentially serious events, such as a spill of hazardous materials from one or two trucks, would likely be controlled to an area reaching no more than 1 mile from the incident, given the geography in the project study area and incident management expertise and experience. Although the types and extents of impacts are speculative, animals, such as birds, that can easily escape the area would not likely be affected. Species that are less mobile would have greater risk of being affected from such incidents.

The wildlife technical memorandum and Appendix E of the memorandum also provide systematic analysis of the potential effects of highway noise and changes in Great Salt Lake level on migratory species. These analyses are based largely on new research conducted specifically for this study (Sections 3.2, *Combined Effects of Changes in Lake Level on Habitat Availability and Habitat Loss from Build Alternatives*, and 3.8, *Highway Noise Disturbance*, and Appendix E of the wildlife technical memorandum). They provide detailed descriptions of potential impacts on migratory species both within the project study area and far beyond it (3 plus miles).

Comment Number NG-7-42

Response A principal remand of the court was to identify and disclose impacts of the proposed action that could potentially affect migratory species, particularly at distances greater than 1,000 ft from the project right-of-way. Because of their mobility, these species not only use the project study area, but move to many other areas throughout the GSLE. Approximately 156 migratory bird species found around Utah Lake also use habitat around Great Salt Lake. Their populations are therefore ecologically defined as all the individuals of each species within the GSLE.

To fully disclose the impacts on these populations, it was necessary to determine how changes in the abundances of each species within the project study area would proportionally affect each population as a whole within the GSLE. The scale for this analysis (regional population level) is uniform and consistent with fundamental ecological impact analysis methods and was developed and approved in consultation with the expert wildlife biologists from the resource agencies. In addition, the cumulative effects analysis presented in the Final Supplemental EIS and wildlife technical memorandum relied not only on an assessment of the GSLE, but also on an assessment of impacts within smaller hydrology units in the project study area.

Comment Number NG-7-43

Response Figure 2-9 of the wildlife technical memorandum shows the abundances and concentrations of migratory waterbirds throughout the GSLE. The high abundances of these species in FBWMA are summarized in the appropriate column (survey site 12). The potential impacts on these species that would result from their proximity to the proposed highway, particularly with regard to noise disturbances, are discussed in Chapter 3, *Environmental Consequences*, of the wildlife technical memorandum. See the responses to comments NG-7-106 and NG-7-119 for discussions on the use of habitat and population densities, respectively, for assessing impacts on bird populations in the GSLE.

Comment Number NG-7-44

Response The ecologically appropriate area of analysis for this study is the GSLE used by migratory waterbird species that use the project study area (see the response to comment NG-7-42). During migration, many species move progressively up or down the Wasatch Front (e.g., Utah Lake to Bear River NWR), stopping at appropriate available habitat—largely wetland areas—as needed. Figure 3-19 in the wildlife technical memorandum shows the estimated historic extent of this habitat; Figure 3-20 shows the approximate present-day condition. Figure 3-30 shows the extent of public and private lands that are subject to potential land use change—and hence loss of wildlife function—in the future. Collectively, these figures show the geographical extent of historic, present, and future conditions that define the cumulative habitat impacts on wildlife in the region.

The wildlife technical memorandum also provides analysis of wildlife habitat changes at in intermediate scale—that of hydrologic units—thus bridging the scale of project-level analysis to region-level analysis. A review of the photographs provided in attachment E of this comment show similar patterns of avian habitat loss, and the Supplemental EIS analysis reflects these land use changes. The relative contribution of the proposed action to these impacts is fully described in Section 3.11, *Cumulative Effects*, of the wildlife technical memorandum. The species population scale was used to evaluate the proportional effects of the proposed action on populations of migratory wildlife species in the GSLE (see the response to comment NG-7-42).

Comment Number NG-7-45

Response See the response to comment NG-7-119 for justification of the habitat-based impact assessment method and the results of a corollary study of species population densities that supports the findings of the habitat-based study.

Comment Number NG-7-46

Response See the response to comment NG-7-122 for a discussion of the intent and scope of the fragmentation analysis. Section 3.3, *Habitat Fragmentation*, of the wildlife technical memorandum presents a comprehensive analysis of the potential impacts of habitat fragmentation on both sedentary species and the more mobile avian species. The projected total habitat loss and potential local population declines of migratory species that would result from the proposed action are very small in the context of total habitat available within the GSLE; moreover, the total numbers of birds are proportionally very high outside the project study area. The overall impacts of habitat fragmentation are of considerably lesser magnitude than the impacts of habitat loss and numbers decline, and therefore would not contribute notably to overall species population changes in the GSLE.

Comment Number NG-7-47

Response Appendix E, *Bioacoustics Analysis of Potential Effects of Highway Noise on Wildlife of Great Salt Lake*, of the wildlife technical memorandum and Section 4.13.3.10, *Highway Noise Disturbance*, of the Supplemental EIS provide a comprehensive analysis of the potential effects of highway noise on wildlife within and beyond (3 plus miles for American Bitterns) the project study area. Figures 3-24a and 3-24b in the wildlife technical memorandum and Figure 4.13-14 in the Supplemental EIS show the estimated effects distances from the proposed highway of different noise levels. These distances and the analysis provided in the text clearly address areas well beyond the 1,000-ft boundary considered in the Final EIS. Figure 3-25 in the wildlife technical memorandum shows the estimated area within which wildlife could potentially be affected by highway noise. FHWA's Traffic Noise Model was developed and extensively tested by FHWA and is a standard tool used by departments of transportation nationwide for modeling the magnitude and transmission range of highway noise (Federal Highway Administration 2003). It is the best model available for this task. FHWA has evaluated the Traffic Noise Model to distances of approximately 1,300 ft (Rochat, J. L., and G. G. Fleming. 2002. *Validation of FHWA's Traffic Noise Model (TNM): Phase 1*. Report Numbers FHWA-EP-02-031 and DOT-VNTSC-FHWA-02-01. Cambridge, MA: U.S. Department of Transportation, Volpe National Transportation Systems Center, Acoustics Facility). The model has been extended beyond that distance in this analysis to approximate the location of the lower noise level contour boundaries and to estimate the potential area of effect. The potential variances in these measurements are identified for the reader in the footnotes of each figure and table.

Comment Number NG-7-48

Response The data required to fully address the wildlife issues identified are provided in the wildlife technical memorandum, the Draft Supplemental EIS, and the new population-based analysis conducted for the Final Supplemental EIS (see the response to comment NG-7-119 based on surveys by Dolling [2003. *Baseline Avian Monitoring for the Proposed Legacy Nature Preserve March 2002 to February 2003*. Final. December. Submitted to HDR Engineering, Inc.] and Paul and Manning [2002. *Great Salt Lake Waterbird Survey: Five-year report (1997–2001)*. Unpublished confidential report. Great Salt Lake Ecosystem Project.]). Based on the best information available, including that provided by expert USFWS and UDWR biologists on the Science Technical Team, these analyses show that the

numbers of migratory birds that use the project study area, including special-status species, are proportionally very small compared to the total numbers of birds of each species within the GSLE. Similarly, the habitat available to these birds in the project study area represents only a small proportion of the total lands used by the same species throughout the GSLE, even those species with concentrated populations (see Figure 2-9 of the wildlife technical memorandum). The conclusion of these analyses, as stated in the wildlife technical memorandum and the Supplemental EIS, is that the impacts of the proposed action on GSLE populations of wildlife species that use the project study area would be small and would not likely affect the long-term viability of any of these species. The information that would be obtained from the studies recommended by reviewers would not change these proportional relationships or the above-stated conclusion.

Comment Number NG-7-49

Response The wildlife technical memorandum and the Supplemental EIS fully disclose the nature and extent of the potential impacts on wildlife that could result from the proposed action. The changes in habitat availability to species in the project study area and Legacy Nature Preserve during different lake levels are shown and quantified in Figures 3-4a through 3-16 in the wildlife technical memorandum and Figures 4a and 4b and Table 3-2 of Appendix E, *Analysis of the Adequacy of the Wetlands and Wildlife Mitigation*, of the Final Supplemental EIS. The areas (and habitats) of the Legacy Nature Preserve that will potentially be affected by different levels of highway noise from the proposed action are shown and quantified in Figure 4.13-14 of the Final Supplemental EIS.

Comment Number NG-7-50

Response The issue of reduced habitat availability for species in the project study area and Legacy Nature Preserve at high lake level is described in Section 3.2.3, *Potential Combined Effects of Changes in Lake Level and Habitat Loss from Build Alternatives on Migratory Birds*, of the wildlife technical memorandum and Section 4.13.3.2, *Changes in Lake Level and Habitat Availability*, of the Supplemental EIS. The acreage of habitat available in the Legacy Nature Preserve at different lake levels is also quantified in Table 3-2 and Figures 4a and 4b of Appendix E, *Analysis of the Adequacy of the Wetlands and Wildlife Mitigation*, of the Final Supplemental EIS.

This analysis recognizes that the carrying capacities of the floodplain habitats, particularly wetlands, in the Preserve and around the GSLE are proportionally reduced as lake level rises, and that competition for resources and the risk of project-related impacts within the project study area will likely increase. The analysis does not assume or imply that when habitat availability within the project study area is reduced at high water, migrating birds can simply move to other areas around the GSLE. Most such areas would be similarly reduced at high lake levels (see Figures 4.13-10 and 4.13-11 in the Supplemental EIS and Figure 3-30 in the wildlife technical memorandum). The birds will move to areas where they can find suitable resources, whether such areas are within the GSLE or at other locations along their migratory pathway. Some mortality is likely to occur in individuals that have depleted their energy reserves upon arrival at Great Salt Lake and cannot compete effectively for the limited resources available around the lake at high water. Other individuals will find what they need and move on. The rise and fall of lake level is a natural cyclic process, which migratory species that use the area have

experienced for millennia. The proposed action will contribute proportionally to the large historic and current growing loss of habitat around the lake, which will exacerbate the diminishment of resources for these species at high water. However, the proportion contributed by the proposed action would be relatively low for all build alternatives (see Table 4.13-8).

Comment Number NG-7-51

Response The analysis of wetland impacts in the Supplemental EIS used the wetlands functional assessment that was conducted for the 2000 Final EIS. Mitigation credits affected at the various lake levels in terms of functional units for each wetland function are shown in Tables 3-3 through 3-6 of Appendix E, *Analysis of the Adequacy of the Wetlands and Wildlife Mitigation*, of the Final Supplemental EIS. That assessment was based on wetland conditions in 1997, when lake levels were approximately 4,200 ft. The impact of inundation on wetland functions was examined in a qualitative, not quantitative, fashion. The models used for the wetlands functional assessment were neutral with respect to wetland type; that is, the same parameters were used for all wetland types. Consequently, the change from marsh, meadow, and playa habitats to open water habitat that would accompany a rise in lake level were not reflected in the results of the wetlands functional assessment. Therefore, the proposed action's impacts under flood conditions, expressed as functional capacity units, would be the same as those under the baseline conditions. As summarized in Table 3-2 of Appendix E, *Analysis of the Adequacy of the Wetlands and Wildlife Mitigation*, of the Final Supplemental EIS, 1,314 acres of wildlife habitat would be available if the lake level was at 4,212 ft; 600 acres of wildlife habitat would be available at a lake level of 4,216-ft. Figure 3-17 of the wildlife technical memorandum shows the dynamics of the Great Salt Lake shoreline habitat as a dynamic ecological process. It should be noted, however, that periodic inundation is an integral part of the ecology that defines the Great Salt Lake Ecosystem and the dynamic nature of the wildlife habitats.

Section 4.13, *Wildlife*, of the Final Supplemental EIS contains a more detailed assessment of the effects of lake flooding on wildlife habitat. In that section and in the wildlife technical memorandum, habitat reduction as a result of inundation was examined quantitatively. See also the response to comment NG-7-50.

Comment Number NG-7-52

Response See the responses to comments NG-7-50 and NG-7-51 for a discussion of the impacts on migratory wildlife at high lake levels. The changes in habitat availability around the lake at high and low lake levels, relative to the habitat losses caused by the proposed action, are documented in Figures 4.13-10 and 4.13-11 and Table 4.13-8 in the Supplemental EIS and Figure 3-30 in the wildlife technical memorandum. Potential mortality of less mobile species (e.g., mice, snakes, frogs) resulting from loss of habitat during high lake levels and from the proposed action is discussed in Section 3.2.2, *Results*, of the wildlife technical memorandum. Discussion of the potential mortality of migratory birds arriving at the lake during high water has been added to both the wildlife technical memorandum and the Final Supplemental EIS. A description of the dynamics of habitat recovery from inundation is provided in Section 3.2.2 of the wildlife technical memorandum. It is recognized that the results of inundation may or may not be fully reversible, depending on prevailing ecological conditions, the local adaptability of species, and

intervening management practices. However, the overall relatively low level of mortality of migratory species that would likely occur due to project-related habitat loss at high water would not, in and of itself, determine the recovery potential of any migratory species in the GSLE.

Comment Number NG-7-53

Response The effectiveness of the proposed mitigation is evaluated in Appendix E, *Analysis of the Adequacy of Wetlands and Wildlife Mitigation*, of the Final Supplemental EIS. In addition, a wetlands mitigation plan has been included in the Final Supplemental EIS (Appendix F, *Draft Wetland Mitigation Plan*). Regulatory Guidance Letter (RGL) 02-02 permits preservation credit when "existing wetlands or other aquatic resources are preserved in conjunction with establishment, restoration and enhancement activities." RGL 02-02 further states that preservation credit may be used as the sole basis for generating mitigation credits when wetlands are under a demonstrable threat of loss or substantial degradation, as noted above. The value of preservation is largely based on whether the wetlands, "(1) perform important functions, the protection and maintenance of which is important to the region where those aquatic resources are located, and (2) are under demonstrable threat of loss or substantial degradation from human activities that might not otherwise be avoided."

Preservation and restoration of wetland habitat were favored over creation of wetland habitat during development of the Legacy Nature Preserve. The Preserve would preserve approximately 2,100 acres of upland and wetland complexes associated with the lake that are regionally important and are currently an internationally important part of the Western Hemisphere Shorebird Reserve Network in the GSLE. The Legacy Nature Preserve would maintain a buffer between the lake and developed lands in perpetuity. Most if not all the ecological functions of the land within the preserve would be preserved, including the natural dynamics of inundation during changes in lake level.

Based on data presented in the Final EIS and the Draft Supplemental EIS, wetlands in the study area are under demonstrable threat of loss or substantial degradation from human disturbance and other land use changes. Due to hydrologic modifications such as creating dikes and channels not related to the proposed action, natural dynamic processes have diminished in wetlands in much of the area along the eastern shoreline of Great Salt Lake. These wetlands face continued threats from projected growth and development in and west of the study area. The Final EIS stated that open space in Davis County is being developed at a rate of about 700 acres per year, which would lead to most of the study area being developed by 2020. Projected losses attributable to future build-out (Figure 4.13-12 in the Supplemental EIS) clearly demonstrate a high likelihood of development of many areas within the Legacy Nature Preserve.

Approximately 62.6 percent (1,314 acres) of the 2,100-acre Preserve lies above the recorded historical maximum elevation of Great Salt Lake of 4,211.8 feet. The Corps did not give preservation credit for preserving land above the FEMA floodplain elevation of 4,212 feet. As such, the functional assessment analysis performed to generate preservation credits only assumed that uplands above the FEMA floodplain boundary would be developed.

Although preservation is an important component of the Legacy Nature Preserve, it should be noted that preservation only represents 30 percent of the mitigation

credits. The Legacy Nature Preserve has generated preservation credit in conjunction with establishment, restoration, and creation activities. Appendix E, *Analysis of the Adequacy of Wetlands and Wildlife Mitigation*, provides a detailed accounting of the mitigation credits generated by establishment of the Legacy Nature Preserve.

Comment Number NG-7-54

Response As described in Section 3.2.2, *Results of Additional Alternatives Evaluation*, of the Supplemental EIS, the Redwood Road Arterial Alternative was eliminated as a reasonable alternative to the proposed action because it would not meet the project purpose and need as reflected by its failure to meet LOS D on I-15 during the peak period. Because this alternative did not meet the project purpose and need, it was eliminated from further consideration in the Supplemental EIS and thus from an assessment of wildlife impacts associated with that alternative.

Similarly, an alternative in the D&RG regional corridor was eliminated from further consideration for the reasons stated in Section 2.2, *Denver & Rio Grande Corridor Evaluation*, of the Final Supplemental EIS. As a result, it too was eliminated from further consideration in the Supplemental EIS and thus from an assessment of wildlife impacts associated with that alternative. See Master Response 2 in Section 2 of this response to comments volume.

Comment Number NG-7-55

Response The federal lead agencies' review of the administrative record specific to UBET's comments from the public scoping meeting and CPIC meetings indicates that all outstanding comments were addressed. In the absence of identifying information, it is not possible to ascertain which comments have not been addressed or to explain the rationale for declining to modify the Final Supplemental EIS as suggested. See also the response to comment NG-7-2.

Comment Number NG-7-56

Response The cost projections presented in the Final EIS have been updated in Appendix G, *Updated Cost Estimates*, of the Final Supplemental EIS on the basis of the most current available geophysical information and design provided by the designer-builder. The proposed action is designed for the geophysical and hydrologic environment in the project study area. See the response to comment NG-7-126.

The assessment of the potential hydrologic effects of the roadway on wetlands and wildlife habitat has been revised to clarify the conclusions from the Forster and Neff report. See Sections 4.12.3.3, *Impacts on Wetland Functions*, and 4.13.3.6, *Wetland Hydrology*, of the Supplemental EIS.

Comment Number NG-7-57

Response Legacy Parkway is located almost entirely in southern Davis County. According to Weber County planners, development in unincorporated areas of Weber County will not change substantially with the proposed Legacy Parkway build alternatives. They state that growth in Weber County is attributable to local economic influences, not sprawl from Davis County or Salt Lake City. This information suggests it is not necessary to expand the project study area beyond that defined in the Supplemental EIS. This conclusion is also supported by the results of the

growth analysis in southern Weber County and the City of Ogden, which showed limited or no impacts in these areas.

Although infrastructure decisions can generate development patterns, all available information indicates that land uses along the Legacy Parkway corridor will change only minimally with either the build or the No-Build Alternatives. The timing of development may change, but with the exception of the areas in the vicinity of the Parkway interchanges, the type of development is not expected to deviate significantly from that projected for the future build-out conditions in 2020.

It is acknowledged that some relatively minor changes in land uses are directly attributable to the Legacy Parkway build alternatives. These include some retail-commercial parcels at the proposed 500 South interchange and some residential density changes near the proposed action. However, these changes do not represent a marked deviation from the No-Build Alternative.

Comment Number NG-7-58

Response See the response to comment NG-6-22. See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-59

Response The projected WFRC population estimates rather than population growth rates were used in the travel demand models. For the Supplemental EIS, WFRC lowered the 2020 projected population to 1,918,000. For the benefit of the reader, a compound annual growth rate was calculated that tied current population to future population. This rate was calculated to be 1.87 percent; it was rounded up to 1.9 percent. Coincidently, in a similar exercise conducted for the Final EIS, the growth rate was calculated to be 1.93 percent and was rounded down to 1.9 percent. In the interest of greater precision, this calculation has been carried out to at least two significant digits in the Final Supplemental EIS.

Comment Number NG-7-60

Response The reference to the Hartgen study was intended to illustrate that the causal relationship between highway construction and population growth is uncertain. There is ample evidence that highway construction accelerates growth in certain areas; there are also examples suggesting that urban highway construction has little or no effect on development patterns. The Supplemental EIS states that households and businesses, when deciding where to locate, use a hedonic approach that considers a range of variables. Although the transportation system is certainly important, it is not the only criterion. The Wasatch Front is a case in point. The combination of available jobs, climate, affordability, scenery, recreation opportunities, and other attributes make it a desirable place to live. Under the current economic and social environment, people will continue to live in and migrate to the Wasatch Front because it offers a reasonable scope of economic opportunity. The concomitant development will occur regardless of whether the Legacy Parkway and other roadway projects are constructed, albeit possibly at slightly different locations and pace.

The WFRC traffic model is a mathematical optimization model that allocates traffic through the road system in a manner that minimizes travel cost. Land use patterns underlying growth rates, location of population, and employment are inputs into the model. There is not an iterative process in the model that modifies

these variables in response to traffic volume. WFRC is examining the possibility of integrating UrbanSim into its model, which, if done, might offer some of the functionality addressed in the comment. However, WFRC has not yet determined if, how, and when this integration will occur. Therefore, induced growth with respect to land use issues must be addressed outside the WFRC model. Such modifications were achieved through the use of off-model adjustments, particularly with regard to the maximization of transit ridership.

The WFRC model does estimate induced travel. This additional travel demand is estimated in response to improved travel speed and travel times. The model does not explicitly estimate future land use changes. It forecasts travel that would result from the officially adopted regional land use forecasts.

Comment Number NG-7-61

Response Section 4.10.2.3, *Water Quality of Surface Conveyances*, of the Supplemental EIS states that UDEQ listed the Jordan River as impaired for low dissolved oxygen (DO) and high total dissolved solids (TDS). The lead agencies have coordinated with UDEQ. UDEQ has determined that the proposed action will not cause the water quality standards to be exceeded; this conclusion is based on the mitigation measures proposed in Section 4.10.3.2, *Surface Water Quality*, of the Supplemental EIS. The mitigation measures include vegetated filter strips and a retention pond near Center Street designed to prevent discharge to the Jordan River in storms up to a 100-year storm. UDEQ will review UDOT's application for a General Stormwater Permit for Construction Activities to ensure that these mitigation measures are included in the permit. UDEQ has not completed the TMDL analysis for the Jordan River as of June 2005; UDEQ listed the Jordan as low priority for further analysis in its 2004 303(d) List of Impaired Waters.

Comment Number NG-7-62

Response Section 4.11, *Permits and Clearances*, of the Supplemental EIS states that UDEQ will reevaluate the Clean Water Act 401 water quality certification. The lead agencies have coordinated with UDEQ regarding the Section 401 certification.

Comment Number NG-7-63

Response The regional HGM guidebook for Great Salt Lake ecosystem slope and depressional wetlands remains in an early draft form. The guidebook is not expected to be completed in the near future and will not be available for use within the timeframe of the Legacy Parkway environmental review.

Comment Number NG-7-64

Response As described in Section 4.12.2.5, *Regulatory Update*, of the Supplemental EIS, the Corps has decided that Great Salt Lake and the wetlands adjacent to it are jurisdictional waters of the United States, and that their federal jurisdiction relative to these areas would not be affected by the noted Supreme Court ruling (i.e., *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, No.99-1178 [January 9,2001]). As a result, the Corps has determined that all of the delineated wetlands in the project study area remain jurisdictional and subject to regulation under Section 404 of the Clean Water Act.

Comment Number NG-7-65

Response Table 4.10-2 of the Supplemental EIS presents recent data on chloride and TDS concentrations in highway runoff and roadside streams compared to UDEQ water quality standards. As illustrated in that table and described in the accompanying text, it is possible that chloride and TDS concentrations in direct runoff from roadways that have been de-iced can vary widely in winter months, and that chloride concentrations can be very high. However, no regulatory standards or chronic toxicity levels for impacts on aquatic wildlife species have been established by the state or federal government for these substances.

Studies have shown declines in the abundance and diversity of macroinvertebrate species in streams affected by road salt. LC_{50} concentrations, or the amount of solid or liquid material that it takes to kill 50 percent of test animals, were estimated for macroinvertebrate species in a 2004 road-salt toxicity study in Michigan (Benbow, M. E., and R. W. Merritt. 2004. Road Salt Toxicity of Michigan Wetland Macroinvertebrates under Different Testing Conditions. *Wetlands* 24(1):68–76.). In that study, road-salt 96-hour LC_{50} concentrations ranged from 5,000 mg/L (2,558 mg/L of chloride) to 10,000 mg/L (4,502 mg/L of chloride). In comparison, chloride concentrations measured in 43 roadside wetland complexes in Michigan ranged from 18 to 2,700 mg/L of chloride, with 75 percent of the chloride concentrations measuring less than 334 mg/L. This study indicates that LC_{50} concentrations for some macroinvertebrate species are well above most concentrations found in roadside wetland complexes in Michigan (Benbow and Merritt 2004).

Chloride concentrations in runoff directly from Highway 20 in New York ranged from 20 to 5,550 mg/L, as illustrated in Table 4.10-2 (Sorenson et al. 1995). In comparison, chloride concentrations in rural streams downstream of Highway 20 ranged from 10 to 235 mg/L. Based on the LC_{50} estimates from the Michigan study above, it is possible that the proposed action would affect macroinvertebrate populations adjacent to the highway, but not those species living downstream where chloride concentrations decrease significantly.

Mitigation for water quality impacts would be accomplished, in part, through incorporation of vegetated filter strips into the design of the proposed highway. The vegetated filter strips, which would be located on the side slopes and in the median of the proposed highway, would reduce flow, capture contaminants, and minimize discharges to downstream water bodies. As required under Section 401 of the CWA, UDOT would also implement BMPs to minimize impacts on water quality.

Comment Number NG-7-66

Response The WFRC travel model and the modified model used for the Supplemental EIS generate results that are consistent with empirical data for the region. WFRC calibrates and validates the travel demand model to locally gathered data and empirical data from comparable regions. The integration analysis conducted for the Supplemental EIS also tested the response of the mode choice models to transit system changes and compared the results against empirical data. For the integration analysis, post model adjustments were used to account for the few changes in the transportation system that the model did not adequately address. The post model adjustments were determined from empirical data and are documented in the integration technical memorandum. For further discussion see the response to comment NG-7-92.

The p.m. peak period highway forecasts for vehicles and average auto occupancy were compared to data gathered in the study area, along the Wasatch Front, and from other locations across the country. Thus, each element of the travel model that was used to determine whether alternatives met the purpose and need and by what margin has been tested against empirical data and found to respond appropriately.

Comment Number NG-7-67

Response Section 4.10.3.2, *Surface Water Quality*, of the Supplemental EIS states that a wide range of more recent literature was reviewed to supplement the water quality information. This literature is listed in Chapter 8, *References*.

Comment Number NG-7-68

Response See Master Response 7 in Section 2 of this response to comments volume.

Comment Number NG-7-69

Response With regard to travel forecasting methodologies, see Master Response 7 in Section 2 of this response to comments volume and Appendix B, 2020 Travel Demand Analysis, of the Supplemental EIS. With regard to land use forecasts, see Master Response 6 in Section 2 of this response to comments volume. With regard to the impact of congestion points north and south of the project area, see Master Response 5 in Section 2 of this response to comments volume.

Comment Number NG-7-70

Response The court found errors in the Corps decision on the earlier Section 404 permit, but did not direct the Corps to take any particular action with respect to that permit. The Corps has authority to suspend a permit and to suspend work under a permit. Suspending work under the permit allowed UDOT to continue to acquire and manage the mitigation properties in the Legacy Nature Preserve. The Corps has received and published notice of UDOT's application to amend (and lift the suspension of work under) the Section 404 permit. This process will allow a complete evaluation of the terms for the Section 404 permit going forward.

Comment Number NG-7-71

Response See the response to comment NG-7-70 regarding the status of the project proponent's Clean Water Act Section 404 permit modification application.

Title 33, Part 325.3 of the Code of Federal Regulations specifies that the following information must be included in a Corps public notice: the applicable statutory authority or authorities; the name and address of the applicant; the name or title, address, and telephone number of the Corps employee from whom additional information concerning the application may be obtained; the location of the proposed activity; a brief description of the proposed activity, its purpose, and intended use; a plan and elevation drawing showing the general and specific site location and character of all proposed activities; a list of other government authorizations obtained or requested by the applicant; a statement of the Corps District Engineer's current knowledge on endangered species; other available information that may assist interested parties in evaluating the likely impact of the proposed activity; the duration of the comment period; and a statement that any person may request, in writing, that a public hearing be held to consider the proposed application. The public notice for the proposed Legacy Parkway was published by the Sacramento District of the Corps on December 3, 2004 (Public

Notice number 200350493). As described above, all the information required under 33 CFR 325.3 for publication in a public notice is contained in that notice. In addition, the public notice referenced the Draft Supplemental EIS and directed the public to the Corps' website where the Draft Supplemental EIS and five technical memoranda were posted for public review.

A determination regarding the Corps findings relative to the proposed action will be disclosed in the Corps' Record of Decision and Section 404 permit application decision.

Comment Number NG-7-72

Response See the responses to comments NG-7-40 and NG-7-64. The Supplemental EIS determined that the Redwood Road extension is not a reasonable alternative to Legacy Parkway. Because the purpose of the sequencing analysis was to evaluate alternative sequences for implementing the major components of the Shared Solution, and because the Redwood Road extension is not a reasonable alternative to Legacy Parkway, it cannot be substituted for the Parkway in the Shared Solution or included in the sequencing analysis.

Comment Number NG-7-73

Response See the response to comment NG-7-74. The model run to which the comment refers is not directly comparable to the network described in the comment. The referenced model run did not assume roundabouts or a boulevard configuration for Redwood Road; it assumed a higher speed and higher capacity configuration for Redwood Road. With regard to freeway coding, the cited model run was a preliminary test and did not contain the fully descriptive coding of the reversible lane concept, lacking specific access/egress points and the friction associated with weaving into and out of the median lanes on a six-lane facility. Furthermore, the model run did not produce a finding that the concept would meet purpose and need. It appears that the commenter did a post-processing of the model output, as shown in Table 3, page 42 of the "Report on the Citizens' Smart Growth Alternative to the Proposed Legacy Parkway." Even then, as shown in the table, the results did not meet the primary purpose and need as reflected by its failure to meet the LOS D criterion.

To directly address the concept proposed in this comment, a thorough and accurate traffic model analysis of the commenter's concept was conducted as part of the analysis of the UBET Alternative; these traffic model runs demonstrate that the UBET Alternative does not meet project purpose and need. See also Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-74

Response This comment contains three main points and is therefore addressed in three parts.

1. Coding reversible lanes abstractly was not a component of the package of model runs used as part of the Supplemental EIS. Abstract coding of reversible lanes would not provide reliable results and was therefore not used to present results or help draw conclusions, and was not mentioned in the Supplemental EIS. After publication of the Draft Supplemental EIS in December 2004, UBET requested that the federal lead agencies model reversible lanes to evaluate the performance of the roadway network if there were reversible lanes

on I-15. This modeling was done, and the results are summarized in Master Response 5 in Section 2 of this response to comments volume.

2. To conduct this modeling, more specific assumptions about the configuration of the reversible lanes on I-15 were needed to ensure a reasonable level of accuracy in the results. In this regard, alternative models run at UBET's request were not more detailed than any of the other alternative model runs performed for the Supplemental EIS. That is, the level of detail used to model all of the alternatives, including those proposed by UBET, was comparable. It was not necessary to develop complex engineering alternatives for reversible lanes in order to conduct modeling of reversible lanes. For a description of the accessibility to reversible lanes utilized to evaluate the UBET Alternative, see Master Responses 5 and 6 in Section 2 of this response to comments volume. The UBET Alternative, its variations, and the refinement of the concept was evaluated against the primary purpose and need criterion, and the UBET Alternative did not meet purpose and need.

3. The UBET Alternative does result in lower regional VMT and VHT than the Shared Solution, but it also results in lower regional average speed than the Shared Solution, and higher regional average speed indicates greater mobility. The UBET Alternative therefore provides less regional mobility than the Shared Solution. See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-75

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-76

Response Local planners have repeatedly informed UDOT that, with few exceptions, South Davis County population growth, employment growth, and future land uses are expected to remain largely invariant when comparing the build and No-Build Alternatives. The exceptions involve the lands immediately adjacent to the 500 South and Parrish Lane interchanges, which would have a retail commercial component if Legacy Parkway were constructed. The jobs/housing balance cited by the commenter reflects the current best estimates of the Governor's Office of Planning and Budget, WFRC, and the local jurisdictions.

Evidence is inconclusive regarding the extent to which elimination of a planned highway from a regional corridor already served by freeway and premium transit would suppress land development in the corridor. The following bullet list provides examples related to this topic from various studies.

- "Although improvements in transportation have structured land use in previous decades, this is no longer true in most American cities. The overall level of accessibility is so high that any improvement resulting from transit can cause only micro changes." (Transportation Research Board. 1998. *Transit Markets of the Future: The Challenge of Change*. Transit Cooperative Research Program, Report 28. Washington, DC: National Academy Press.)
- "Land-use impacts were dependent upon (1) overall local economic conditions, (2) access to medium income or high-income residential areas, (3) availability of land to develop, and (4) favorable local zoning policies. (Giuliano, G. 1989.

New Directions for Understanding Transportation and Land Use. University of California, Irvine.)

- "Later studies … test the relationship between highway spending and employment growth. With time series data, they … concluded that highway spending did not cause employment growth in Minnesota counties." (Boarnet, M. G. 1995. Highways and Intra-Metropolitan Employment Growth. University of California, Irvine.)
- "… factors such as zoning and permitting requirements, quality of schools, and prejudices either for or against certain communities may play a much more important role in location decisions than transportation access or planned improvements." (Ewing, R., and Lichtenstein, A. 2002. *Induced Traffic and Induced Development.* Rutgers University. Citing Kockelman et al. 2001)
- "…the influences of behavioral shifts (latent trips, modal changes, route diversions) are nearly four times as strong as those of structural changes (land use shifts). (Cervero, R. 2001. *Road Expansion, Urban Growth, and Induced Travel: A Path Analysis*. July. University of California, Berkeley.)

Therefore, and as discussed in *Evaluation of UBET Proposals for North Corridor Transportation and Land Use* (Fehr & Peers 2005), no compelling arguments support the premise that market conditions would produce the major regional land use shifts proposed in the UBET Alternative. In the absence of compelling arguments to the contrary, adopted regional forecasts will be used in the Supplemental EIS.

It is possible that future market forces substantially above or below recent historical trends may result in modifications of the population and employment projections and associated land use plans. These uncertainties are inherent in all major public investments. However, the use of estimates other than those endorsed by the local planning jurisdictions is difficult to support, especially when these jurisdictions have consistently stated that Legacy Parkway will not substantially affect their future growth.

In contrast, the revised jobs/housing balance identified by the commenter appears highly speculative. Projections of such massive changes in future jobs and housing are unsupported by any local planning agency. The validity of the land use assumptions incorporated in the Supplemental EIS has been confirmed through discussions with local land use planners. See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-77

Response The comment references Figures ES-6 and ES-7; on the basis of the context, it is assumed that the comment intended to reference are to Figures ES-9 and ES-10 from the *Report on the Citizens' Smart Growth Alternative to the Proposed Legacy Parkway* (Smart Mobility, Inc., and R. B. Cervero. 2005. March. Berkeley, CA.). The alternative noted in the comment was evaluated as the Maximum Future Transit Alternative in Section 3.2.2, *Results of Additional Alternatives Evaluation*, of the Supplemental EIS. This alternative includes the maximum future transit scenario, I-15 with 10 lanes, but without Legacy Parkway. Table 3-4 and Figure 3-3 show that I-15 would operate at LOS F under this alternative in the peak period peak direction.

Although the Supplemental EIS focuses primarily on the project study area, Section 4.3.3.4, *Travel Patterns and Accessibility*, of the Supplemental EIS discusses interstates/major arterials outside the study area. This discussion acknowledges the potential future traffic congestion that may occur along segments of I-15, US-89, and I-215 that are located north and south of the study area. Separate studies and proposed improvements to address these segments are also documented. Nevertheless, the fact that there may be other traffic problems in 2020 does not affect the purpose of and need for the proposed action.

See also the response to comment NG-7-87 and Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-78

Response See the responses to comments NG-7-37 and NG-7-92 regarding the comment's reference to errors in the transit modeling in the Supplemental EIS. The transit analysis in the Supplemental EIS presents a reasonable scenario for the potential for transit in the North Corridor. The transit integration strategy used for the Supplemental EIS goes beyond the robust transit concept proposed by UTA and WFRC in the WFRC long range transportation plan. The forecasting methods used in the Supplemental EIS are enhanced to be even more sensitive to transit benefits than the standard WFRC model supported by the Federal Transit Administration for use in ridership forecasting in the North Corridor. The results closely match local and national experience with transit investments. The changes in the transit modeling from the Supplemental EIS are not a result of errors, but rather, the fact that the transit scenario was modeled for the Supplemental EIS instead of based on financial constraint as it was in the 2000 Final EIS. Actual future transit improvements in the region would require the passage of ordinances, the support and actions of local elected officials, and the reaction of the real estate market.

The land use assumptions used in the Supplemental EIS are not erroneous. See the responses to comments NG-7-86 and NG-7-91 for a more detailed response.

With respect to the purpose of the sequencing analysis, see the response to comment NG-7-27. The federal lead agencies consider it reasonable to assume that all components of the Shared Solution will be in place by 2020 because that assumption agrees with state, regional, and local plans. In addition, travel demand forecasting performed for the June 2000 Final EIS and the Supplemental EIS confirm that the corridor will need all components of the Shared Solution to meet projected 2020 travel demand. To evaluate whether and how investment in transit could help to meet projected travel demand, the Supplemental EIS sequencing analysis assumed that maximum future transit could be implemented as early as the major transit investments in commuter rail would occur. That is, the analysis of the Maximum Future Transit Alternative includes implementation of changes in land use, transit-oriented development, seamless transfers, and other transit-enhancing changes. The forecasting assumes that these transit-enhancing changes, which would normally require many years to become reality, would be in place when commuter rail first operates. In the sequencing analysis, the scenarios in which it was postulated that commuter rail was implemented first do show somewhat higher transit mode shares (almost 6 percent) in the early years when rail is operating and the highways are under construction than in 2020 when all elements of the Shared Solution are in place (about 5 percent). Even at this higher level, however, the transit mode does not capture a sufficient share of projected travel demand to

warrant a different conclusion about the need for all components of the Shared Solution, including Legacy Parkway.

Comment Number NG-7-79

Response The Shared Solution includes both significant travel demand management efforts and TOD. TOD is a form of land use planning and therefore the Supplemental EIS used information from WFRC and the local city and county plans for projections of anticipated future land use. These included substantial TOD, which was incorporated into the maximum transit analysis. In addition, comments on the Draft Supplemental EIS have identified a possible TOD in Farmington that does not currently appear in the Farmington land use plan. Such possible changes, including TOD at planned commuter rail stations in South Davis County, were presented in the Supplemental EIS as part of the maximum future transit scenarios. Additionally, the Supplemental EIS was closely coordinated with the commuter rail final EIS (prepared by FTA and UTA) to assure consistency of information concerning transit and TOD. The federal lead agencies believe that the Supplemental EIS analysis properly relied on established land use projections of the local governments, as well as identifying potential changes in transit mode share if changes in land use, such as TOD, which might be reasonably expected to occur, were adopted and implemented.

Comment Number NG-7-80

Response In the Shared Solution, HOV lanes are under consideration for future reconstruction of I-15. The relative proportion of single-occupant vehicles to HOVs in the North Corridor justifies only one HOV lane for the corridor. Given operational efficiencies and the orientation of I-15 toward the Salt Lake central business district, it is more appropriate to locate the HOV lane on I-15 than on Legacy Parkway. The Supplemental EIS evaluated HOV lanes to consider how variations of HOV and general-purpose lanes on I-15 might affect the need for Legacy Parkway. For these purposes, the benefits of HOV lanes are captured appropriately in the WFRC travel demand model, with the additional adjustments described in the Supplemental EIS. To compensate for the fact that the WFRC model does not address the likely effect of shifting from single occupancy vehicles to carpool vehicles given the savings in travel time of an HOV lane, the Supplemental EIS analysis maximized the HOV lane volume to the maximum service flow rate of a freeway prior to congestion. In other words, the HOV lanes have been modeled to allow maximum speeds; volumes beyond this speed could lead to decreased HOV usage, because the benefits of HOV lanes are reduced when compared to general-purpose lanes. See the response to comment NG-7-82 for further discussion of HOV lanes and their respective service flow rates.

The observation that all the alternatives as modeled would result in more capacity and lower congestion if all the lanes were general-purpose lanes is partially correct. A general-purpose lane at 1.2 persons per vehicle carries approximately 2,500 people per hour. An HOV lane carrying 2.2 persons per vehicle would need to carry at least 1,140 vehicles per lane per hour to match the person-carrying capacity of a general-purpose lane. The modeling has assumed that the HOV lane would carry 1,680 vehicles, the maximum service flow rate of the HOV lane, as described above.

The Supplemental EIS does not mislead readers into thinking that carpool promotions and vanpool incentives are specifically included in the travel model. The mode choice model does include many of the "soft" incentives offered by UTA and employers in the region to encourage people to shift from driving to various forms of mass transit. Traffic assignment applies the reduction of vehicle trips that result from these incentives to the highway network. Although the model uses traffic congestion, including congestion caused by limiting the operational capacity of the HOV lane, to alter the "appeal" of various modes through a logit model, it does not specifically make carpooling or vanpooling more appealing on the basis of the travel time savings of the HOV lane. To account for this, the HOV lane was post processed and assumed "full" from an operational standpoint even though it might carry fewer vehicles.

Comment Number NG-7-81

Response See the responses to comments NG-7-81 and NG-7-82 for discussion of HOV lanes.

See the response to comment GP-562-2 for further discussion of reversible lanes. The Katy freeway example referenced in the comment letter is not pertinent to the proposed action because the Katy freeway has adjacent general-purpose lanes that operate at LOS F, indicating that the HOT lanes can provide a meaningful travel time advantage to those willing to pay. According to *Evaluation of UBET Proposals for North Corridor Transportation and Land Use* (Fehr & Peers 2005), the travel time advantage provided by HOV/HOT lanes for an alternative that meets purpose and need cannot exceed approximately 5 miles per hour (speed limit = 65 mph, slowest general-purpose lane speed = 59.7 mph [Transportation Research Board 2000]). The value of time necessary to justify a minimal toll of 5 cents per mile is in excess of $35/hour, which is dramatically higher than any value-of-time data gathered along the Wasatch Front. Nevertheless, by modeling the HOV lanes at full to maximum speed, as described in the response to comment NG-7-80, the Final Supplemental EIS essentially mimics the usage of a perfectly efficient HOT lane.

The Supplemental EIS has used the most up-to-date information available on HOV and HOT lanes. Table B-9 in Appendix B of the Supplemental EIS has been updated to show that both the TSM and the TDM aspects of HOV lanes were considered in travel modeling. The TSM aspect is included in the modeling itself; the TDM aspect is accounted for by post-model adjustments as necessary. The Utah statewide managed lanes study identifies I-15 in the North Corridor as having high potential for HOV/HOT lanes (Utah Department of Transportation. 2005. *Managed Lanes*. Final Report). The evaluation of alternatives in the Supplemental EIS is consistent with this designation. See Master Responses 5 and 6 in Section 2 of this response to comments volume for discussion of HOV and HOT lane evaluation for I-15 in the North Corridor.

Comment Number NG-7-82

Response UDOT seeks to maintain service at a minimum of LOS D in the peak period, consistent with the purpose and need for the Legacy Parkway. According to the Highway Capacity Manual, a 65 mph freeway under LOS D operates at 59.7 mph, with a maximum flow rate (capacity) of 2,090 passenger cars per lane per hour. It was assumed that the maximum capacity of the HOV lane would be 1,680 vehicles

per hour, or the maximum service flow rate for freeway under LOS C operating at a speed of 64.6 mph. Traffic counts in Salt Lake County reveal the HOV lane operating at approximately 1,200 vehicles per lane during the peak hour.

Given the current HOV volumes in Salt Lake County, I-15 opening day HOV use is not likely to exceed 1,680 vehicles per lane per hour. It is difficult to anticipate the HOV demand for the design year 2020, as HOV forecasts are not accurately developed in the WFRC travel model. It is possible that the HOV lane could become a managed lane of a different nature, such as a 3+ HOV lane, an HOT lane, or some combination that would allow the HOV lane to continue to function at its optimum capacity. These I-15 features could be addressed in the I-15 EIS or other I-15 planning and management assessments.

HOT lanes provide a means of "selling" excess capacity to single occupant vehicle users by essentially charging a "toll" for the use of one or more travel lanes to drivers who choose to pay that toll in exchange for reduced traffic congestion. Accordingly, the capacity of 1,680 passenger cars per hour represents the maximum service volume of a single HOV or HOT lane to achieve a travel time advantage over other lanes operating at or below 2,090 passenger cars per hour. Any increase in the lane volume above 1680 vehicles per hour would erode the travel time advantage of the HOV or HOT lane. From an analytic perspective, the use of 1,680 vehicles per hour as the maximum HOV volume serves the same purpose as an HOT lane—that of maximizing the managed lane demand.

One of the advantages of managed lanes is the ability to change the management strategy based on changing conditions. In other words, an HOV lane can be converted to a 3+ HOV, or a 2+ HOV in the off peak and a 3+ HOV in the peak, or an HOT lane, or various combinations of these. In most areas, including Salt Lake County, the use of HOV lanes is driven as much by policy as by detailed capacity analysis. Therefore, the Legacy Parkway Supplemental EIS is not intended to create an overriding managed lane policy for UDOT as much as it is proposed to be consistent with the HOV policies already established in Salt Lake. A single managed lane could be accommodated within existing and newly proposed freeway systems and ramp terminals; dual managed lanes would require more widespread changes.

Comment Number NG-7-83

Response The 2000 Final EIS and the Supplemental EIS use analysis techniques that capture transportation systems management (TSM) strategies, such as ramp meters, with the approaches to traffic flows. The suggestion in the comment that the capacity number should change, with and without ramp meters, neglects to consider that the capacity number is based on free flows. That is, the capacity analyses for I-15 and Legacy Parkway assume effective traffic flow management such as ramp meters. The WFRC model speed flow curve is an accurate representation of the effects of congestion on traffic speed. It is used as the basis of all emissions and air quality analysis in the region.

The lane capacity of 2,090 vehicles per lane (LOS D) used in the Supplemental EIS represents conditions under metered flow. It is derived from the maximum flow of 2,400 vehicles per lane maximum capacity (LOS E/F) as stated in the *Highway Capacity Manual: 2000* (Transportation Research Board 2000) .

Comment Number NG-7-84

Response The Redwood Road Arterial Alternative was evaluated in the Supplemental EIS; it was screened out because it did not meet the purpose and need. The arterial in the Supplemental EIS combined the eight-lane arterial with widening I-15 to 10 lanes, projected maximum future transit, TSM, ITS, and TDM.

Because the UBET Alternative was not received prior to publishing the Draft Supplemental EIS, the specific alternative was not evaluated in that document. This alternative was submitted March 21, 2005, and was evaluated prior to release of the Final Supplemental EIS.

The evaluation process for the UBET Alternative is equivalent to the evaluation process of all other alternatives. The first criterion is an alternative's ability to meet purpose and need; if an alternative is not eliminated on the basis of this criterion, then additional screening factors, such as wetlands, farmlands, hazardous waste sites, Section 4(f)/6(f) resources, socioeconomic factors, community impacts, and costs, are considered. For a more detailed description, see Section 3.2.1, *Criteria for Evaluating Additional Alternatives*, in the Supplemental EIS. All alternatives evaluated were subjected to this same process.

Comment Number NG-7-85

Response See the response to comment NG-7-84. In addition, note that UBET's proposed Frontage Road cross section totals 74 ft. This cross section comprises a 16-ft landscaped area, four 11-ft travel lanes, another 6-ft landscaped area, and an 8-ft multi-use path. The figure referencing this example only shows a 45-ft impact, which accommodates only the travel lanes. When impacts are determined they are based on the total area affected, which in this case would be at least 74 ft, and wider at intersections.

See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-86

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume for a discussion of how this alternative would affect travel conditions and address the future transportation demand in the North Corridor. The UBET Alternative with reversible lanes would exceed the LOS D capacity threshold by considerably more than 0.08 percent and would not meet the proposed action's purpose and need. Because it would not meet purpose and need, it was screened out and, accordingly, not considered as part of the sequencing analysis.

The post-processing analysis in the Supplemental EIS did account for the positive effects of HOV and high-occupancy toll (HOT) lanes by reducing the amount of traffic using the mixed-flow general-purpose (GP) lanes to account for the maximum auto-occupancy achievable in the corridor and the maximum utilization of the HOV or HOT lanes before reaching the maximum functional capacity of such lanes (no worse than LOS C, and no worse than one LOS grade better than the adjoining GP lanes). See the response to comment NG-7-81.

The land use assumptions used in the Supplemental EIS reflect the adopted regional land use of local governments, as utilized by the WFRC for travel demand forecasting. The land use assumptions were reviewed for reasonableness with representatives of cities and counties in the North Corridor. As described in the Supplemental EIS, for purposes of the integration analysis and other forecasting, a

more robust scenario, including land use changes, was developed. The resulting land use patterns used in the Supplemental EIS are the most transit-supportive assumptions that are reasonable. The comment states that more compact transit-oriented development is needed not just in the study area, but throughout the region. As discussed elsewhere in these responses, such large-scale changes in land use are inconsistent with the information gathered for the Supplemental EIS. See the responses to comments NG-7-79 and NG-7-92.

Comment Number NG-7-87

Response This comment, and the figures and tables in *Report on the Citizens' Smart Growth Alternative to the Proposed Legacy Parkway* (Smart Mobility, Inc., and R. B. Cervero. 2005. March. Berkeley, CA.) to which it refers, contain a number of incorrect assumptions and observations. Note also that the referenced Figure 18 of the Smart Mobility report shows that without Legacy Parkway, the study area contains a significant bottleneck in the freeway system in both 2001 and 2020. The Smart Mobility report provides the following information.

- As Figure 17 on page 45 of the Smart Mobility document indicates, mile-for-mile I-15 in the North Corridor operated at considerably worse LOS in 2001 than did the regional freeway system as a whole.
- Sufficient traffic reaches I-15 through the North Corridor today (Figure 17 on page 45 of comment document) to cause traffic backups entering and through the corridor, while downstream freeways operate at acceptable levels of service.
- As shown in Figures 17 and 18 (pages 46 and 47 of Smart Mobility comment document), compared to the 2020 maximum transit plus 10-Lane I-15 case, the Shared Solution with Legacy Parkway transforms about 20 miles of freeway on I-15 and I-215 from LOS E or F to LOS D or better.
- The Smart Mobility figures indicate that conditions on the freeways upstream and downstream of the North Corridor are similar or better in 2020 under the Shared Solution than under alternatives that do not include Legacy Parkway.
- The graphics on page 13 of the Smart Mobility document show the LOS on I-15 within the North Corridor is LOS D or better under the Shared Solution, but LOS E and F under the UBET Alternative.
- The referenced figures on page 13 of the Smart Mobility document are inconsistent and misleading in that they only report conditions on the freeways for the UBET Alternative and not for the Shared Solution. If full information were reported in both cases, the underlying congestion on surface streets would be lower under the Shared Solution than under the UBET Alternative

The Legacy North project from US-89 to Gentile Street is included in the current WFRC transportation long range plan as a Phase 1 improvement for implementation in the 2004 to 2012 timeframe. This is the same phase and the same timing as the long range plan envisions for Legacy Parkway. Were Legacy North constructed prior to Legacy Parkway, the additional lanes north of US-89 without additional lanes to the south, would worsen the capacity imbalance and intensify the bottleneck caused by the lack of capacity south of US-89. As a result, excluding Legacy North from the 2020 quantitative analysis in the Supplemental EIS analysis understates rather than overstates the degree to which the absence of

Legacy Parkway in the southern part of the corridor would constitute a capacity bottleneck in 2020. With the projected growth in corridor traffic between 2020 and 2030, bottleneck conditions in 2030 would be worse in 2030 than in the 2020 conditions quantified in the Supplemental EIS.

The Supplemental EIS does not overstate the need for additional capacity through the North Corridor. As information contained both in the Supplemental EIS and in the Smart Mobility document indicate, improvements in the study area would benefit peak period traffic flow through the corridor. Moreover, the fact that other areas in the system will experience congestion does not eliminate the need for the proposed action.

The Supplemental EIS used a robust transit component with considerable transit improvements beyond those in the adopted 2020 regional transportation plan in order to evaluate how the system would operate with maximum integration of transit and roads. This, again, was a conservative approach. Had the Supplemental EIS used only the transit improvements in the adopted regional transportation plan (which is now a 2030 plan), the transit share would have been lower and the need for additional road capacity would have been more compelling. These improvements are used for modeling to determine road capacity requirements; they are not intended to be guaranteed improvements. See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-88

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume.

The comments concerning suppressed and latent demand are noted, and the discussion in Appendix B of the Supplemental EIS has been clarified. The data and description have been updated concluding that the Shared Solution generates a slightly higher level of VMT than the No Build Alternative. See Master Response 7 of Section 2 of this response to comments volume for discussion on state of the practice for travel demand models.

Comment Number NG-7-89

Response The percentages cited are the ratios of employment totals provided in the WFRC model to employment totals provided for the counties by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). UBET acknowledges that “the model inputs exclude non-farm proprietors, construction, and agriculture employment that is included in the BEA totals” and that “these differences account for the majority of the differences.” The apparent model assumption is that employees in these fields generate few work trips. UBET does not dispute this. The 65 and 77 percent figures are not biased; rather, they reflect that there is a higher percentage of agricultural employment in Davis County than in Salt Lake County. This is not a model bias, but an indication that the model properly reflects the difference in agricultural activity between the counties.

If the non-farm proprietors and construction and agricultural employment are included, the BEA numbers are 85,014 for Davis County (compared to 78,969 in the WFRC model) and 523,528 for Salt Lake County (compared to 512,659 in the WFRC model). Based on the BEA figures, there are actually more “missing” employees in Salt Lake County. But the difference of about 4,000 individuals is not substantial and does not cause a large directional shift of commuting trips in the model.

The number of workers per household is an accurate statistic on which to base the number of work trips, and it is not included in the model. However, the WFRC model does not rely solely on the number of vehicles per household in the work trip generation model; the number of persons per household is also a variable. Since the number of persons in a household correlates to the number of workers in a household, at least some of the effect of the number of workers on trip generation is considered in the model. Relying on the number of vehicles and persons per household is an acceptable, state-of-the-practice method for modeling work trips. UBET's comment overstates the potential concern because it does not account for the fact that not only is the number of vehicles per household higher in the suburbs, but so are the numbers of persons per household and workers per household. Consequently, the number of work trips per household is higher in the suburbs.

Specific to the comment regarding whether the base 2001 model matches afternoon peak-period volumes on I-15 or elsewhere in the region, it would appear that the comment attempts to question the validation of the model in terms of its ability to reflect existing travel demand on I-15. The 2001 travel demand model was validated, and, while the 2004 model has not yet been validated, it remains appropriate because it is based on the 2001 validated model.

See also Master Response 7 in Section 2 of this response to comments volume.

Comment Number NG-7-90

Response WFRC has been testing UrbanSim but has not decided whether or how to use UrbanSim in its travel forecasting. Pending such decision, official adopted travel forecasts have been used. Regarding the land use assumptions in the Supplemental EIS, see the response to comment NG-7-86. Regarding possible shifts in land use within the corridor, see the response to comment NG-7-91.

As discussed elsewhere in these responses, such large-scale changes in land use are inconsistent with the information gathered for the Supplemental EIS. See the response to comment NG-7-92.

Comment Number NG-7-91

Response The federal lead agencies have no authority over local land use choices, including locations and nature of housing or places of employment. Generally, FHWA and the Corps rely heavily on state, regional, and local projections of population distribution and land use. For the integration analysis in the Supplemental EIS, the lead agencies used the CPIC process to explore transit enhancements and to assess whether there might be TOD and transit-enhancing changes in land use. As indicated in Table 1-1 of the Supplemental EIS, population and employment within the North Corridor are projected to change by about 32,000 combined between 2001 and 2020. The TOD land use assumptions developed through the CPIC process for the integration analysis shifted about 5,300 individuals (plus another 3,300 beyond the North Corridor) to locations within transit station areas. This represents about 17 percent of the expected growth in the corridor. The comment referring to this number as a small percentage of regional growth is misleading and misrepresents the efforts in the Supplemental EIS in this regard.

The Supplemental EIS considers the possibility that a second land use pattern could evolve if Legacy Parkway were not built. Section B5.1, *Possible Land Use Shifts under No-Build Alternative,* of Appendix B of the Supplemental EIS discusses the possible land use shifts that could occur within the North Corridor under the No-

Build Alternative and the resulting changes to travel patterns and impacts. The land use pattern discussed in Section B5.1, although inconsistent with the official WFRC forecasts, addresses the concerns expressed in the comment that currently unpredicted changes in the real estate market could emerge. Section B5.1 of Appendix B concludes that if the Legacy Parkway right-of-way and nature preserve were not constructed, as would happen under the No-Build Alternative, land use development in the corridor could be higher in 2020 than under the Shared Solution scenario. As a result, traffic impacts under No-Build would be greater on local streets in the western areas of the North Corridor and on I-15. See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-92

Response Section 2.3, *Integration*, of the Supplemental EIS cites *Traveler Response to Transportation System Change* (Transportation Research Board. 2004. *Traveler Response to Transportation System Change*. TCRP Project B-12, Report 95) for assessing likely effects of transit and land use change because it is a nationally respected compendium of research and empirical data on the subject. Developed by the international Transportation Research Board, under a structured process involving expert panels and peer review, it represents the most complete, credible, and balanced source of practical information on the subject. For the Supplemental EIS analysis, the federal agencies and their consultants relied on years of experience and knowledge as well as this particular compendium.

Concerning specific transportation elements, the Supplemental EIS made reasonable adjustments, as described below, based on research and experience:

- **Transit-oriented development (TOD)**—The transit forecasts presented in the integration analysis of the Supplemental EIS adjusted the WFRC model forecasts to account for TOD design characteristics independent of the effects of proximity to transit, which were accounted for by a separate adjustment (see next bullet). The TOD adjustment accounts for changes in automobile trip generation resulting from changes in neighborhood design. Other common characteristics of TOD were specifically addressed in the WFRC model, including development density and diversity or mix; these characteristics therefore did not warrant an off-model adjustment. Focusing on the design factor itself, reputable research, includes the relevant chapter of Traveler Response to Transportation System Change, indicates the reduction in trip generation per capita associated with TOD is about 3 percent. The preparers of the Supplemental EIS obtained a pre-release version of the TOD Chapter B-12 of the *Traveler Response to Transportation System Change* from the authors.
- **Proximity to transit**—To relate the "proximity to transit" adjustment to proximity to commuter rail, the Supplemental EIS uses a 2003 study (Bay Area Rapid Transit and Nelson/Nygaard Consulting Associates. 2003. *I-580 Corridor Transit Study Phase 2*. Draft Final Report. June.) of transit station–area effects along a successful commuter rail line in the San Francisco Bay Area instead of the 1996 study of light rail stations referenced in the comment. Furthermore, the transit proximity factors in the 1996 Transit Cooperative Research Program (TCRP) study have been superseded by subsequent work by the same author (Cervero, R. 1998. *Methodology and Results for Forecasting Year 2025 Ridership among Three Land-Use Scenarios*. July 6.): "The TCRP H-1 model failed to include a variable measuring transit service intensity. This

omission resulted in an underspecified model that ended up overstating the influence of other variables, including population densities, on ridership levels." The elasticity derived in the 1998 study relating transit ridership to population density within 0.5 mile of a transit station was 0.192, or a 19.2 percent increase in ridership resulting from a 100 percent increase in 0.5-mile population. Hence, the 20 percent to 25 percent factor used in the Legacy Parkway transit integration modeling represents a generous allowance for transit share based on the most recent research on light rail and even more recent research specifically on commuter rail.

- **Transit access**—In the Supplemental EIS analysis, this factor is intended to account for the effects of expanded feeder and local bus service, not the effects of proximity to rail, which is addressed by the "proximity to transit" factor described in the preceding bullet.
- **Transit fares**—The fare elasticities cited in the referenced document include factors for services ranging from standard local bus service to premium services such as rail. As stated in the comment, bus fare elasticities range between about -0.36 and -0.42. However, page 12-11 of TCRP Chapter B-12 indicates that the fare elasticity for rail is 50 percent of the bus elasticity, translating to a factor of about -0.20. This is the more relevant value for the Supplemental EIS analysis because premium transit (rail) fares were reduced to the fares charged for local bus travel. The fare structure change included in the Supplemental EIS integration analysis and the definition of maximum future transit for the alternatives analysis applied to reducing fares on premium transit. Therefore, -0.20 elasticity (one-half of bus elasticity) is appropriate. Because the WFRC model was found to produce the -0.20 level of fare sensitivity, the model did not require additional adjustments to account for the effects of fare changes.
- **Parking**—Parking price elasticities are not uniform over the range of parking prices in urban areas. A Transportation Research Board study in Portland (Hess, D. B. 2001. The Effect of Free Parking on Commuter Mode Choice: Evidence from Travel Diary Data. *Transportation Research Record* 1753:35–42) indicates that elasticities are lowest at relatively low parking price ranges, and elasticities increase in high parking price areas. Elasticities are less than -0.08 where prices are less than $2 daily, and up to -0.18 where prices are up to $4 daily. The maximum future transit strategy used in the Supplemental EIS integration and alternatives analysis increased downtown parking charges by 50 percent and 100 percent above the rates of increase already projected for 2020. These adjustments applied to all parking costs, long term and short term, and consequently affected all-day commuter parking as well as short-term parking for other purposes.
- **Local and express bus**—The WFRC model was found to have an elasticity for express bus of +0.84, closely matching the +0.83 cited in the comment for areas with population greater than 500,000 population. The maximum future transit strategy employed in the Supplemental EIS did not propose increases in local bus frequencies, only improvements in route coverage and timing of transfers with premium commuter rail and bus rapid transit modes. Therefore, the WFRC model was found appropriately accurate for analyzing the effects of express bus service increase and seamless transfers without further adjustments.

- **Synergies**—The WFRC model was found to be capable of accurately modeling the effects of most of almost all the proposed transit improvements. The model is capable of combining the effects of different improvements because it includes all sources of improvement to travel times, transfer times, access efficiency, transit fares, and parking costs in its calculations, combining them into weighted composite impedances that are then compared non-linearly among the available modes (bus, rail, carpool, auto). The model was validated against local transit ridership data, including the successful TRAX system. Post-process adjustments to account for the effects of transit-oriented design and proximity to transit were applied through multiplication so that their effects compounded the effects of in-model impedance and incentive factors, thus representing synergies.
- **Bus rapid transit and commuter rail**—BRT is a relatively new concept, and in only a limited number of locations has conventional bus service been converted to BRT. BRT bus lines, including the Wilshire Metro Rapid line in Los Angeles, experience ridership increases of between 20 percent and 50 percent over the conventional transit service they replace. BRT was modeled explicitly in the WFRC model by coding frequent high-speed bus service (with prioritized traffic signals and queue-jump opportunities) along routes east of I-15 with high concentrations of population and employment. The BRT routes generated ridership increases in the corridor of about 40 percent, consistent with increases experienced on BRT lines such as Metro Rapid. Express buses in the North Corridor would travel separate routes from BRT, including the planned I-15 HOV lanes. They are handled separately in the analysis using the validated modeling approach cited above and demonstrating elasticities of about 84 percent consistent with empirical evidence. Concerning commuter rail service sensitivities, the WFRC model was supported by the Federal Transit Administration for forecasting transit ridership in the North Corridor. The comment cites no information that contradicts the commuter rail headway elasticities found in the model. The commenter states an expectation that transit response should be higher under LOS E. Response would be somewhat higher under LOS E conditions; however, the Shared Solution, as examined in the integration analysis and the alternatives analysis, would operate under LOS D conditions. The Supplemental EIS transit forecasts are produced by a validated, federally reviewed model, the results of which are corroborated by empirical evidence, and the commenter provides no evidence to the contrary.

Concerning the statements on page 40 of the Supplemental EIS integration report on relative transit shares in other regions, the sources of this information include the Downtown Denver Partnership, Portland Region Transit Facts, and American Public Transportation Association (APTA) for San Diego, as well as data provided directly by the San Francisco Bay Area Rapid Transit District (BART), and Altamont Commuter Express (ACE) commuter rail, and California Department of Transportation (Caltrans) in the San Francisco Bay Area. Specifically, the information indicates that the Supplemental EIS transit forecasts for the North Corridor compare well with transit use measured in comparable corridors in other cities. The range of current transit shares for downtown commutes (i.e., share of riders traveling to a central business district from a defined regional area) are 35 percent for Denver, 18 percent for San Diego, and 31 percent for Portland. The

Supplemental EIS forecasts that about 25 percent of commuters from the North Corridor to downtown Salt Lake City will use transit. It also finds that many travelers through the North Corridor are not headed to downtown Salt Lake; therefore, the average transit share for all travelers crossing the Woods Cross screenline is projected to be between 5 and 6 percent. This compares favorably with transit ridership in other western rail corridors that serve a comparable range of downtown-oriented, regional and interregional travel patterns, such as the Dublin and Willow Pass BART corridors and ACE commuter rail corridor in the San Francisco Bay Area.

Comment Number NG-7-93

Response See Master Response 7 in Section 2 of this response to comments volume.

Comment Number NG-7-94

Response With regard to the underlying validity of the travel demand model, see Master Response 7 in Section 2 of this response to comments volume. The Supplemental EIS includes future traffic projections for the year 2020 No-Build Alternative and the year 2020 Build Alternatives. As the projections show, traffic is expected to increase in the future. Table 4.3-9 indicates that future traffic will likely be higher on several of the local roadways under the No-Build conditions versus the Build conditions. This shifting of through-corridor traffic from I-15 to the local roadway network is a result of growing traffic congestion on I-15 if transportation improvements are not implemented. Section 1.2.4, *Needs Addressed by Legacy Parkway Project*, of the Supplemental EIS, and Table 1-4 in particular, presents average accident rate information and discusses the relationship between increased through-corridor traffic using local streets and the increased risk of accidents.

Comment Number NG-7-95

Response The multi-modal combination of improvements included in the Shared Solution, including the Legacy Parkway, is forecast to provide LOS D conditions northbound during the p.m. peak period on I-15 in 2020 and 2030, thus meeting the primary purpose and need.

Comment Number NG-7-96

Response There are currently no design standards or guidelines for parkways under AASHTO. A parkway is defined in many ways, including the following: A broad landscaped highway, often divided by a planted median strip (Dictionary.com); a wide scenic road planted with trees (Dictionary.com); a broad landscaped thoroughfare (Merriam-Webster); arterial highway for noncommercial traffic, with full or partial control of access, and usually located within a park or ribbon of park-like developments, or a wide road, usually divided, with an area of grass and trees on both sides and in the middle (Cambridge Dictionary). Due to the lack of specific guidelines for a Parkway, the use of AASHTO's rural freeway guidance is appropriate.

The design for the proposed Legacy Parkway provides access to recreation along the corridor. Access is provided to Bountiful Pond, FBWMA, and local area trails. Access to Bountiful Pond will be improved with Legacy Parkway, because access is currently via an unimproved road, while the new access will be via a two-lane frontage road between 500 South and the Landfill. This same roadway provides improved access to the FBWMA. Access to Bountiful Pond from the trail will be

along the frontage road between 500 South and the Bountiful Landfill. Limiting access to the Legacy Nature Preserve was a decision made by the Corps and the management team in order to protect this area from potential impacts.

The trail is being proposed in conjunction with the roadway alternatives. The trail connects with the Jordan River Parkway in Salt Lake County and the Farmington Creek Trail in Farmington. The Legacy Parkway provides a link in the regional trail system.

UDOT has committed to making the trail very user friendly. There will be extensive landscaping, using native trees, grasses, and shrubs, along the trail corridor. There will be a fence to separate motorists from trail users, as well as a fence to separate multi-users from equestrian users.

In addition to landscaping for the trail, there will be extensive landscaping along the entire roadway. Native grasses, trees, and shrubs will be planted along the sides of the roadway used for landscaping in the median and along the sides of the roadway, as appropriate.

All these elements contribute to Legacy Parkway's character as a Parkway, with extensive landscaping, improved access to neighboring recreational resources, the addition of a trail (providing a regional link to existing trail systems), and the creation of the Legacy Nature Preserve.

Comment Number NG-7-97

Response See the responses to comments NG-7-18 and NG-6-2 regarding speed limit and safety, the response to comment GP-303-1 regarding median width, and the response to comment NG-6-3 regarding water quality.

Comment Number NG-7-98

Response See the response to comment NG-7-21.

Comment Number NG-7-99

Response Right-of-way issues, including the median width, are evaluated in Section 2.1, *Right-of-Way Issues*, of the Supplemental EIS. The impacts reported in the analysis of the D&RG alignments are not overstated. For the reasons presented in that discussion, the 15-m median was the narrowest practicable median. For informational purposes only, UDOT evaluated a narrower, 62 m (204 ft) roadway cross section to be used in conjunction with the 95 m (312 ft) cross section to minimize impacts where the D&RG alignments cross wetlands or existing development. The width reduction is achieved by removing the trail and incorporating retaining walls outside the 30-ft clear zone to reduce the highway footprint. The 62 m (204 ft) cross section is the narrowest cross section that could be built in accordance with design standards. Information is presented in the D&RG technical memorandum. Minimal impact reductions were achieved with this narrower cross section. For example, only one to four relocations and 3–7 acres of wetland impacts would be avoided using this narrower roadway cross section.

Comment Number NG-7-100

Response A variety of alternatives were evaluated for the ability to meet the purpose and need criteria. The Legacy Parkway alternatives, as part of the Shared Solution, were the only alternatives that met the primary purpose and need and provided

LOS D conditions on average over the peak travel demand period on I-15 in the North Corridor. No other alternatives, including the UBET Alternative and its variations, have been demonstrated to meet the primary purpose and need as reflected by their failure to achieve LOS D on I-15. In Section 2.4, *Sequencing*, the Supplemental EIS provides information about the costs of delaying implementation of Legacy Parkway.

Comment Number NG-7-101

Response The projected population and employment for 2020 has not changed significantly between the 2000 Final EIS and the Supplemental EIS. As reflected in Table B-1 in Appendix B of the Supplemental EIS, there has been a slight reduction (between 1 and 2 percent) in the projected 2020 population and employment in Davis and Weber Counties. The WFRC model, in contrast, was changed significantly between 2000 and 2004. WFRC is constantly working to improve the forecasting of its travel demand model. The various model changes reflected in the February 2004 model used for the Supplemental EIS have resulted in projecting lower travel demand for 2020 than the model used for the 2000 Final EIS. Nevertheless, the Supplemental EIS demonstrates that Legacy Parkway (and the other components of the Shared Solution) is needed to meet travel demand in 2020. Therefore, the Supplemental EIS already addresses the point raised by this comment about whether the changes in projected population and the changes in forecasting 2020 travel demand affect the need for Legacy Parkway.

Comment Number NG-7-102

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume.

Comment Number NG-7-103

Response The Legacy Parkway, in essentially the same way it is defined in the Supplemental EIS, has been endorsed by the WFRC and other community representatives. They have also endorsed other parts of the Shared Solution, including I-15 reconstruction and expansion, commuter rail and other expansion of mass transit. The Shared Solution, including Legacy Parkway, is consistent with the following:

- Long range transportation plan (Wasatch Front Regional Council 2003a).
- Congestion management system (Wasatch Front Regional Council 2004).
- Increased transit funding allocations to Salt Lake, Davis, and Weber Counties.
- Transit 2030 Committee recommendations.
- Envision Utah goals.

Even with maximum future transit, all available TSM, and TDM, the WFRC congestion management system study concludes that Legacy Parkway is needed to provide acceptable LOS on I-15 in the North Corridor.

Comment Number NG-7-104

Response The Supplemental EIS reflects the fact that UDOT and the local communities support "commuter choice" and other programs. This support has also been reflected in many plans and statements. Recently, the WFRC Congestion Management System (CMS) study (Wasatch Front Regional Council 2004) investigated a full array of system management/efficiency and demand

management/reduction for the Salt Lake and Ogden-Layton urbanized areas. CMS measures included such commuter choice benefits as commute alternatives/rideshare promotion, car sharing, staggered and flexible work hours, telecommuting, employer commute trip reduction ordinances, growth planning, walk and bicycle programs, parking management and pricing, and increased gas or auto-related taxes and fees. System efficiency measures included transit improvements, HOV lanes, signal coordination, access management, ITS, incident management, reversible lanes and ramp metering. After studying the potential feasibility and effectiveness of the full set of potential measures and conducting computer modeling of regional system needs with the CMS, the study concluded that Legacy Parkway would be needed to address transportation needs in the North Corridor, even with maximum feasible CMS measures in effect (see pages IV-15 and IV-16 of the CMS study). These conclusions are consistent with the Supplemental EIS, which found that robust transit, travel demand management, intelligent transportation systems, and transportation management systems were desirable and needed, but could not alone meet projected travel demand without Legacy Parkway.

Comment Number NG-7-105

Response As indicated by the analyses described in the Supplemental EIS, Legacy Parkway is necessary to provide adequate transportation capacity in the North Corridor. The comment indicates that the overall corridor capacity would be 20,500 passenger car equivalents per hour (pceph) for the Shared Solution (Capacity Legacy) or 16,000 pceph for the UBET Alternative (Capacity Smart Growth), compared to the projected peak hour demand of 15,000 pceph (Traffic Volume). At volumes reaching or approaching the full design capacity, every facility in the corridor would operate at an unacceptable LOS; that is, the lanes would be full. In the example presented in the comment, all lanes on I-15, Redwood Road, US-89, 1100 West, 800 West, and 500 West would operate at 94 percent of their full design capacity, indicating LOS E conditions would prevail on all facilities. Conversely, as indicated in the graphic referenced in the comment, the projected travel demand can be accommodated on Legacy Parkway (and the remainder of the transportation system) at an acceptable LOS. As the graph referenced in the comment illustrates, without Legacy Parkway, the North Corridor would operate at worse than LOS D, indicating it would not meet the purpose and need. Also according to the graph, with Capacity Smart Growth, I-15 and the major surface streets in the North Corridor would operate at LOS E or F, indicating that the UBET Alternative would not meet the project objective related to minimizing intrusion of through traffic onto local streets.

Comment Number NG-7-106

Response Habitat-based impact analysis is a standard, scientifically valid, and widely accepted method for evaluating project effects on wildlife (Cooperrider et al. 1986; Noss et al. 1997; Morrison et al. 1998; *Gifford Pinchot Task Force v. USFWS*; U.S. Fish and Wildlife Service 1998). This methodology was fully reviewed and approved by the Science Technical Team, which included expert wildlife biologists from USFWS and UDWR. Moreover, to examine the relative densities of birds and supplement the habitat-based impact analysis presented in the Draft Supplemental EIS, a new analysis was conducted to evaluate the numbers of waterbirds in the project study area relative to those in the regional study area (see Section 2.4.2,

Existing Distribution and Use of Wildlife Habitats, of the wildlife technical memorandum). A principal focus of the wildlife study was to evaluate the potential effects of Legacy Parkway on migratory species. The habitats described in the wildlife technical memorandum define biologically distinct and GIS-quantifiable areas used by these species in the project and regional study areas. Tables 2-2 through 2-10 in the wildlife technical memorandum and Tables 4.13-1a and 1b in the Final Supplemental EIS show which species use each habitat type, what they use it for (e.g., foraging, breeding), and their potential occurrence and breeding status in the project study area. Analysis of impacts on special-status species was not conducted by habitat proxy alone, but was supported by demographic information on species densities, habitat specificity, and seasonal abundances in the area (see Section 3.10, *Effects on Special-Status Wildlife*, of the wildlife technical memorandum). Figure 2-9 in the wildlife technical memorandum shows the differences in the abundances of various species and their spatial use of the GSLE. The GIS-based habitat analysis used in this study is both appropriate and scientifically justifiable for assessing project impacts on wildlife.

The conclusion that the proposed action would not result in a notable change in the long-term viability of species in the GSLE is based on local variations in numbers of birds in the project study area contrasted with numbers in the GSLE (see Figure 2-9). This conclusion is supported by the presence of large areas of suitable habitat throughout the GSLE that are occupied by large numbers of focus species, compared with documented numbers and densities in the project study area. Reduction in the numbers of these species in the project study area would not appreciably affect the species' population size in the GSLE. See the responses to comments NG-6-17 and NG-7-119.

Comment Number NG-7-107

Response The proximity of the project study area to the areas commonly used by long-billed curlews (including the Associated Duck Clubs) is shown in Figures 2-8 and 2-9 of the wildlife technical memorandum. Expert local ornithologists on the Science Technical Team classified this species as a common transient (i.e., a bird that migrates through in the spring and fall) in the GSLE and a rare transient in the project study area. During a recent survey of the Legacy Parkway Nature Preserve (conducted over 35 survey periods performed between April 2001 and February 2002, in which 9 km of transect were surveyed each period), only two birds were observed, both on April 13, 2001 (Dolling, J. S. 2002. *Baseline avian monitoring for the proposed Legacy Nature Preserve April 2001 to February 2002*. Final. November. Submitted to HDR Engineering, Inc.). Given the results of these surveys and the fact that long-billed curlew were not seen on subsequent surveys during the breeding season, it is unlikely these birds breed in the Legacy Nature Preserve.

The annual mean number of birds documented in the Associated Duck Clubs over a 5 survey-year period (Paul, D., and A. E. Manning. 2002. *Great Salt Lake Waterbird Survey: Five-year Report [1997–2001]*). Unpublished confidential report. Great Salt Lake Ecosystem Project) was 16. This number represents approximately 13 percent of the total mean abundance of long-billed curlews (125 birds) or 4 percent of the high count (409 birds) documented in the GSLE during this survey. The vehicle traffic disturbance of curlews cited by the commenter (Jenni et al. 1981 cited in Dugger, B. D., and K. M. Dugger. 2002. Long-billed

Curlew (*Numenius americanus*). In A. Poole and F. Gill (eds.), *The Birds of North America*, No. 628. Philadelphia, PA: The Academy of Natural Sciences and Washington, DC: The American Ornithologists' Union.) was due to direct off-road vehicle use in a nesting area. No information is currently available on highway traffic disturbance of long-billed curlews. Specific information from the commenter's personal citations (i.e., Cavitt personal observation, Cavitt and Budge in preparation) was unavailable, has not been substantiated by peer review, and therefore could not be evaluated.

Comment Number NG-7-108

Response Only the Pacific coastal populations of the snowy plover are currently listed, not the interior populations. No snowy plovers have been documented within the project study area (See Table 2-6). Neither the Supplemental EIS nor the wildlife technical memorandum assert that the total habitat of any type available in the GSLE or project study area is likely to be used uniformly by snowy plover or any other species; local variations in habitat use are clearly illustrated in Figure 2-9. Comparisons of the acreages of habitat in the project study area to regional availability of that same habitat provides a baseline for spatial assessment of overall habitat availability in the GSLE. Cavitt 2005 is not listed in the commenter's references and cannot be reviewed or verified.

Comment Number NG-7-109

Response See the response to comment NG-7-106.

Comment Number NG-7-110

Response Figure 3-23 in the wildlife technical memorandum summarizes Reijnen et al.'s (Reijnen, R., R. Foppen, C. ter Braak, and J. Thissen. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. *Journal of Applied Ecology* 32:187–202) highway noise effects on grassland bird species diversity in the Netherlands. Appendix E, *Bioacoustics Analysis of Potential Effects of Highway Noise on Wildlife of Great Salt Lake,* of the wildlife technical memorandum reviews this study. Figures E-3a and E-3b show the potential areas of effect at specified highway noise intensities in the project study area. Figure 4.13-14 of the Supplemental EIS shows the potential area of effect of highway noise on the Legacy Nature Preserve. Table 4.13-11 summarizes the estimated acres of wildlife habitat that would be exposed to highway noise disturbance of various levels.

Comment Number NG-7-111

Response See the response to comment NG-7-42.

Comment Number NG-7-112

Response Section 2.4.4, *Existing Habitat Fragmentation*, of the wildlife technical memorandum does not state that the negative effects of fragmentation are limited to sedentary species, but that fragmentation is more likely to affect such species due to their limited dispersal capabilities. An analysis of the potential effects on these species (in addition to fragmentation effects on more mobile species, such as shorebirds and waterfowl) appears in Section 3.3.2, *Results*, of the wildlife technical memorandum.

Comment Number NG-7-113

Response FRAGSTATS is a widely used procedure for measuring changes in landscape structure. When applied to habitat-based impact analysis, the results can be used to evaluate the potential effects on wildlife of changes in habitat availability. The sentence in the wildlife technical memorandum addressing this point has been edited to reflect this. Section 4.13.3.12, *Changes in Lake Level and Habitat Availability*, in the Supplemental EIS combines this procedure with population data (species density) to estimate the effects of habitat loss from different build alternatives on populations of special-status species. Population Viability Analysis (PVA) and Bayesian Belief Network (BBN) models were not used for the reasons stated in the wildlife technical memorandum. The long-term viability of species within the GSLE depends on the viability of all populations around the lake, not just the project study area. Detailed demographic data were not available for any species or were insufficient to reliably use this methodology. The scope of work, cost, and time estimates provided by the commenter to obtain this data are not realistic. Furthermore, the inherent error associated with estimating parameters based on published data from often remarkably different populations commonly makes this analysis untenable or too generalized to be useful for site-specific impact analysis. The true nature of fragmentation of the project study area and region is illustrated by comparing Figures 3-19 and 3-20 in the wildlife technical memorandum.

Comment Number NG-7-114

Response The habitats defined by the polygons in the fragmentation analysis are not species specific, but are areas used by multiple migratory species. See the response to comment NG-7-106. The fragmentation analysis shows how these polygons (and hence habitat available to species that use them) change in the course of development. The potential effects of these changes on these species are described in Sections 3.3.2, *Results*, and 3.3.3, *Potential Effects of Habitat Fragmentation on Special-Status Wildlife Species*, of the wildlife technical memorandum.

Comment Number NG-7-115

Response Figure 3-20 shows the extensive nature of the fragmentation referenced in the excerpt reproduced in the comment. The wildlife technical memorandum does not state or suggest that extant habitats are unsuitable for wildlife or that all human-affected habitats are equally degraded. However, all such habitats are degraded to some degree. Tables 2-2 through 2-10 show what species are likely to use these habitats, including pasture, croplands, and developed lands.

Comment Number NG-7-116

Response As indicated in the description of catastrophic hazardous spills in Section 3.4.3, *Catastrophic Hazardous Materials Spills*, of the wildlife technical memorandum, by definition, *catastrophic spills* are those that would have significant adverse effects on wildlife. It is recognized that even single spills could have such effects, depending on the substances, the season, and the location of the spill. The word "only" has been deleted from Section 3.4.3 of the wildlife technical memorandum.

The agencies are only able to estimate the number of hazardous spills that will occur in a given year; they are not able to predict the type or quantity of material that will be involved. Accordingly, it is speculative and inappropriate to attempt a

more specific determination of the potential impacts than is already presented. See also the response to comment NG-7-41.

Comment Number NG-7-117

Response Native vegetation is generally preferable for a variety of reasons. Landscape vegetation will be selected to consider potential wildlife usage; the landscape design will be undertaken in consideration of the potential for increased wildlife usage to result in increased road mortality for certain species. UDOT is committed to using native vegetation where feasible and practical.

Comment Number NG-7-118

Response Appendix D of the wildlife technical memorandum presents a comprehensive analysis of the impacts of artificial lighting on wildlife in the project study area. This information provides the scientific basis for the conclusions presented in Section 3.7, *Artificial Light Disturbance*, of the wildlife technical memorandum and Section 4.13.3.9, *Artificial Light Disturbance*, of the Supplemental EIS. For clarity, additional supporting detail for the conclusions in the wildlife technical memorandum has been added to the Final Supplemental EIS. Because no citations were provided for the additional effects identified in the comment, it was not possible to verify the commenters' contentions regarding effects of light on bird nest-site density or nest-site selection behavior. Moreover, because no species or examples of specific impacts were given regarding the purported effects of light on mammal communication, it was not possible to interpret the comment as identifying a positive or negative effect, nor what the actual effect would be. Similarly, no information was provided to allow critical evaluation of the comment that the positive effects of light for some species (e.g., attracting moths for bats) would have negative consequences within the broader community.

Comment Number NG-7-119

Response See the response to comment NG-7-106. The assumption that all areas of a given classified habitat type are equally suitable for wildlife is not stated or implied in the wildlife technical memorandum or the Supplemental EIS. Figure 2-9 in the wildlife technical memorandum shows the non-uniform distribution of individual bird species throughout the GSLE. The habitat types defined by each polygon are structurally and vegetatively similar, allowing for quantitative comparison of the local and regional distribution and availability of these areas to wildlife. The polygons are not defined by unique species-specific characteristics. Each area is used by multiple species (see Tables 2-2 and 2-3 in the wildlife technical memorandum and Tables 4-13-1a and 1b in the Supplemental EIS) to the extent that suitable resources are available to them. The percent availability comparisons of project study area vs. regional study area offer a coarse estimate of relative availability of each habitat type; however, these comparisons do not evaluate species densities or population levels for the specific areas because those data are not available. (See the response to comment NG-7-106 for the description of and justification for this habitat proxy methodology.) These comparisons do not infer or imply any causal relationship between the spatial availability of these areas and uniformity in individual species densities, survival, or reproductive success. The analysis should be viewed in that context only.

To examine the relative densities of birds, an additional analysis was conducted for the Final Supplemental EIS to evaluate the numbers of waterbirds in the project

study area relative to those in the regional study area. This analysis is summarized in Section 4.13.1, *Approach and Methodology*, of the Final Supplemental EIS and described in detail in the wildlife technical memorandum.

The habitat-based impact analysis discussed above indicates that the amount of wildlife habitat within the project study area constitutes approximately 0.1 percent of that available throughout the GSLE. The estimated proportional abundances of wildlife species (waterbirds) in the Legacy Nature Preserve are comparably small (0.22–0.44 percent overall; a maximum of 0.01 percent for special-status species). These results show that the habitat-based analysis provides a reasonable quantitative representation of the proportional impacts the proposed action would have on migratory wildlife populations within the project study area.

Comment Number NG-7-120

Response This comment is consistent with the Supplemental EIS. Table 4-13 in the Supplemental EIS summarizes the seasonal abundances and breeding status of all bird species that use Farmington Bay WMA. Figure 2-9 in the wildlife technical memorandum fully documents the estimated abundances of birds that use Farmington Bay WMA. It ranks the survey site (#12) as 4th highest in total bird abundance of all the areas surveyed by Paul and Manning (2002. *Great Salt Lake Waterbird Survey: Five-year Report (1997–2001)*. Unpublished confidential report. Great Salt Lake Ecosystem Project) around Great Salt Lake. The abundances of each species within each survey area are color coded to provide a proportional reference to abundances of the same and other species in all sites surveyed, including those adjacent to the project study area. The Great Salt Lake population sizes of American avocet, black-necked stilt, American white pelican, and other species used in determining the international importance of the GSLE for migratory birds are provided in Table 2-14 of the wildlife technical memorandum. These data provide extensive information on the relative proportion and ecological importance of Farmington Bay's bird populations. The proposed action's potential impacts on Farmington Bay, particularly noise, are fully described in Chapter 3 of the wildlife technical memorandum and are incorporated by reference in the Supplemental EIS. Note also that Appendix A, *Consultation and Coordination*, of the Supplemental EIS contains a summary of the consultation and coordination activities engaged in during preparation of the Supplemental EIS and the wildlife technical memorandum; it does not contain population data.

Comment Number NG-7-121

Response The analysis of relative levels in bird populations in the project study area (Dolling, J. S. 2002. *Baseline Avian Monitoring for the Proposed Legacy Nature Preserve April 2001 to February 2002*. Final. November. Submitted to HDR Engineering, Inc.) and the regional study area (Paul, D., and A. E. Manning. 2002. *Great Salt Lake Waterbird Survey: Five-year Report [1997–2001]*. Unpublished confidential report. Great Salt Lake Ecosystem Project) are described in the response to comment NG-7-119.

Comment Number NG-7-122

Response The intent of the fragmentation analysis in the wildlife technical memorandum and the Supplemental EIS was to demonstrate that habitat fragmentation would occur as a result of the proposed action, approximate the extent and character of fragmentation within the project study area, and compare the relative impacts of

fragmentation that would result from each of the build alternatives. As stated in the Supplemental EIS, biological information on the specific effects fragmentation would have on different species was and is not available. As a result, the best commercial and scientific data available was used to disclose the spatial extent and biological nature of these impacts on wildlife. The analysis showed that the spatial effects differed only slightly between alternatives, and that they would be additive to the fairly extensive fragmentation already characterizing the project study area. Based on this information and the documented low populations of species in the project study area, it was reasonably concluded that the actual effects of fragmentation on wildlife present in the project study area would be less than the effects of direct habitat loss; moreover, analysis showed that direct habitat loss resulting from the proposed action would not likely produce any detectable change in the long-term viability of any special-status species in the area.

Comment Number NG-7-123

Response The discussion of habitat fragmentation presented in the wildlife technical memorandum and the Supplemental EIS describes the effects of fragmentation relative to direct habitat loss and how such losses would affect the regional population viability of special-status species. See the response to comment NG-7-122.

Comment Number NG-7-124

Response Measurements of light and noise are fairly easy to obtain, but measurements of their effects on species are not. Appendices D, *Effects of Artificial Light on Wildlife*, and E, *Bioacoustics Analysis of Potential Effects of Highway Noise on Wildlife of Great Salt Lake*, of the wildlife technical memorandum (discussed in the Supplemental EIS) provide analyses of the known and potential effects of noise and light on wildlife. Appendix E provides the results of bioacoustics research conducted specifically for evaluating the potential effects of noise on wildlife within the project study area. This information and additional analyses provided in Sections 3.7, *Artificial Light Disturbance*, and 3.8, *Highway Noise Disturbance*, of the wildlife technical memorandum fully discuss the extent and nature of highway noise effects on wildlife species in the area as can be determined from best available information. The complex details of these studies and their results cannot be simply surmised.

Comment Number NG-7-125

Response After additional consultation and coordination, USFWS and UDWR requested assistance from UDOT wildlife specialists to develop and implement a postconstruction monitoring plan that meets both the lead agencies' NEPA responsibilities and the wildlife agencies' objectives. This commitment is included as part of the mitigation plan (Appendix F, *Draft Wetland Mitigation Plan*, of the Final Supplemental EIS).

Comment Number NG-7-126

Response A sentence has been added to Sections 4.13.3.6, *Wetland Hydrology*, and 4.12.3.3, *Impacts on Wetland Functions*, of the Final Supplemental EIS stating that the conclusions in the Forster and Neff study are preliminary and that monitoring will continue. The preliminary conclusions, however, form the basis for a portion of the analysis of this subject. UDOT has committed to continue monitoring groundwater

during construction of the Legacy Parkway. This mitigation commitment is presented in Section 4.24, *Mitigation Summary*, and Section 4.10.3.2, *Surface Water Quality, Groundwater Conveyances*.

The groundwater modeling conducted for the Final EIS indicates that the maximum decrease in groundwater elevation would be less than 2 inches in interchange areas where the fill is up to 27 ft, and less than 1 inch in areas where the fill was projected to be 9 ft. Since the 2000 Final EIS, UDOT has determined that the fill will likely be 6 ft rather than 9 ft in many locations. Most of the groundwater slope wetlands that the project intercepts are near 500 South and 1200 North, where the fill was projected to be 9 ft and now may only be 6 ft. Also, the model conservatively assumes that there is no discharge of water from the deeper principal aquifer to the shallow aquifer. Modeling the upward discharge of water from the principal aquifer (as is known to occur in the project study area) would further reduce this estimate of impact. The benefit of additional monitoring locations, or of isotropic (chemical) or geochemical testing, to refine an estimate of impacts conservatively projected to be less than 2 inches would be marginal.

The groundwater conveyance structures, which were designed by the UDOT design-build team, allow groundwater to flow from the east side to the west side of the road if groundwater is impounded to a certain level near the ground surface. During the course of a season or a decade, groundwater levels vary from being near the ground surface to many feet below the ground surface. The groundwater slope wetlands derive water from the shallow aquifer when the ground surface intercepts the groundwater. Accordingly, the groundwater conveyances will function to convey groundwater to the groundwater slope wetlands on the west side of the Parkway during periods when the wetlands would normally derive water from the shallow aquifer.

Wasatch Mountain Club

Comment Number NG-8-1

Response See Master Responses 5 and 6 in Section 2 of this response to comments volume. See the response to comment GP-665-2.

PacifiCorp

Comment Number NG-9-1

Response The Supplemental EIS acknowledges that high voltage transmission lines owned and operated by PacifiCorp exist within the area designated as mitigation for the Legacy Parkway project (i.e., the Legacy Nature Preserve). Research determined that on some properties PacifiCorp had obtained properly described and recorded easements, while on other properties no easement was found. UDOT would acquire nearly 2,100 acres of land in fee title to create the Legacy Nature Preserve. It is proposed that PacifiCorp relinquish its current easements with respect to each individual property within the Legacy Nature Preserve; a new comprehensive easement will be developed incorporating PacifiCorp's existing facility and accommodating the installation of a future sixth line. UDOT's efforts to identify PacifiCorp's existing and future rights as they pertain to the operation and

maintenance of this utility entailed extensive negotiations with PacifiCorp, concluding with a mutually agreed upon Utility Asset Maintenance and Operations Plan (UAMOP). This plan does not eliminate any current or future PacifiCorp rights, but rather outlines specific locations for future access and procedures that will be followed when PacifiCorp works on its facility within the Legacy Nature Preserve. In many ways, accessibility to the power line facility will be improved as a result of removal of existing fences that delineated individual properties within the Preserve.

Comment Number NG-9-2

Response UDOT and PacifiCorp have worked diligently to develop and agree to the terms of the Utility Asset Maintenance and Operations Plan. This plan has been developed in conjunction with and reviewed by the Corps and FHWA. UDOT intends to fully implement the terms of this agreement to the extent feasible through property acquisitions and as required to mitigate the impacts of the proposed action and to comply with the terms of the 404 permit. Inclusion of this document in the Supplemental EIS is not necessary, and may be inappropriate. Approximately 40 third-party interests, including various cities, counties, and other utility companies, are involved with the proposed action. Agreements are in place with these entities that essentially outline the scope of work and cost allocation responsibilities.

Comment Number NG-9-3

Response Under the terms of the agreement negotiated with UDOT, PacifiCorp will relinquish its easements on the individual property within the Legacy Nature Preserve. In return UDOT will rewrite and grant a new comprehensive, wider easement that incorporates PacifiCorp's existing facility and accommodates the installation of a future sixth line.

Comment Number NG-9-4

Response Under the terms of the agreement negotiated with UDOT, PacifiCorp will be allowed access to the UDOT facility at specified locations to minimize the potential damage to land areas within the Legacy Nature Preserve. PacifiCorp will conduct its regular inspection and maintenance activities within established time periods that would not impede the natural nesting seasons of wildlife species that utilize the Legacy Nature Preserve area. In the event of an emergency outage situation, PacifiCorp has the right to conduct repairs on its facility irrespective of such nesting periods.

Comment Number NG-9-5

Response Various existing utility easements encumber many of the properties that would be acquired for the proposed action. Some of these utilities may require relocation into other easements to accommodate project components; others may remain in place with little or no impact.

Comment Number NG-9-6

Response The phrase "but impacts would be minor" has been removed from the Supplemental EIS.

Comment Number NG-9-7

Response This section states that the transmission corridor easement is being widened by 75 ft.

Comment Number NG-9-8

Response Table 4.4-7 summarizes displacements associated with the various alternatives. Other sections of the Supplemental EIS describe right-of-way purchases and the UAMOP agreement (see the response to comment NG-9-1). Under the terms of the agreement negotiated with UDOT, PacifiCorp is to relinquish its easements with respect to the individual property within the Legacy Nature Preserve. In return UDOT will rewrite and grant a new comprehensive wider easement that incorporates its existing facility and accommodates the installation of a future sixth line.

Comment Number NG-9-9

Response No utility upgrades have been identified for the Legacy Nature Preserve. Under the agreement with UDOT, PacifiCorp has the ability to construct an additional high-voltage power line through the Legacy Nature Preserve, but such construction would require issuance of a 404 permit by the Corps. The existing access for those utilities that remain in the Preserve has been determined to be adequate, with some restrictions.

Comment Number NG-9-10

Response Section 4.12, *Wetlands*, of the Supplemental EIS only addresses mitigation for impacts on wetlands. General guidelines for utility agreements associated with wetland mitigation will be included in a Final Mitigation Plan; this mitigation plan would be approved by the Corps when it takes action on the application for the Section 404 permit amendment. While some agreements include necessary utility access improvements, overall access to the Legacy Nature Preserve would be reduced and controlled to prevent activities within the Preserve that could degrade wetlands.

Comment Number NG-9-11

Response Section 4.12, *Wetlands*, of the Supplemental EIS only addresses mitigation for impacts on wetlands. While some agreements include necessary utility access improvements, the net effect of utility agreements in the Legacy Nature Preserve has been designed to protect and improve existing wetland functions.

Comment Number NG-9-12

Response There are no additional impacts on wetlands for any utility line relocations authorized or addressed in the Legacy Parkway Section 404 permit. Accordingly, the Section 404 permit includes impacts for the roadway, with no additional impacts resulting from utility line relocations.

Comment Number NG-9-13

Response General guidelines for utility agreements associated with wetland mitigation will be included in a Final Mitigation Plan; this mitigation plan would be approved by the Corps when it takes action on the application for the Section 404 permit amendment.

Comment Number NG-9-14

Response The culverts that will be used to convey water under the highway will range up to 2 m or more in diameter. During spring runoff these conduits may be filled to capacity, but during most of the remainder of the year they would not be. At such time numerous species of wildlife, including deer, could move through the culverts. The responses of birds to the fencing will be different for different species. Larger birds such as waterfowl are likely to take a higher flight path when crossing over the highway. This may not be the case for smaller birds (e.g., songbirds). Section 4.13.3.7, *Wildlife Mortality*, has been modified to address these issues.

Comment Number NG-9-15

Response The voltage of the transmission lines has been corrected in the Final Supplemental EIS.